THE

LARYNGOSCOPE.

VOL. XXV. ST. LOUIS, JUNE, 1915. No. 6.

ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

CASES OF NASAL DEFORMITY CORRECTED BY BONE TRANSPLANTATION.*

DR. WILLIAM W. CARTER, New York City.

The purpose of this presentation is two-fold: First, to show an improvement in the technique of bone transplantation and, second, to show the present condition of some of the cases which were presented several years ago so that attention may be directed to what happens to bone that has been transplanted by the auto-plastic method. It will be seen from the accompanying plates that where the bare transplanted bone has come into contact with the live periosteum-covered bone, a large amount of growth has taken place in the transplant. Also, where the bone was transplanted with periosteum how much more rapidly periosteum-covered transplants grow.

(1) The first patient is a young man, 27 years of age, who has always been healthy and gives no history of specific infection. Two years before applying for treatment he fell a distance of thirty feet, striking on his nose. A marked depressed deformity resulted which involved both the bony and cartilaginous dorsum of the nose.

Operation. A piece of rib without periosteum was transplanted through an external semilunar incision.

Result. Primary union; deformity corrected; patient discharged from the hospital seven days after operation.

*Read before the meeting of the New York Academy of Medicine, April 22, 1915, New York City.

This case has been under constant observation and has been x-rayed repeatedly. The plates show that the bone, though transplanted without periosteum, has not been absorbed and that its growth is greatest where it comes in contact with the living, periosteum-covered bone. The cosmetic result of the operation is very satisfactory.

(2) The second patient is 20 years of age. He has always been healthy with the exception of a rhino-pharyngitis since early childhood. While playing basketball six years ago he was struck on the nose, the blow fracturing it. The bridge of his nose dropped in and he was unable to breathe through it. A submucous operation was performed in March, 1914, which partially relieved the obstruction. When he came to operation for the deformity the nose was broad and flat, with a pronounced depression at the ends of the nasal bones.

Operation. A broad piece of the ninth rib (split), covered with periosteum, was introduced *from within the left naris* and grafted on the naso-frontal process of the frontal bone.

Result. Primary union; deformity corrected; patient discharged from the hospital six days after the operation. The transplant is firmly united to the frontal bone. This method has the great advantage of leaving no external scar.

The manner in which the operation is performed is to prepare the right side of the chest by scrubbing with green soap and water and then painting with Tr. Iodin. The nose is then thoroughly cleansed with Dobell's solution, the face is scrubbed with soap and water and painted with Tr. Iodin, followed by alcohol. The nasal cavity is then blocked beyond the ends of the nasal bones by pledgets of cotton. The tip of the nose is raised with the left thumb and a small spatula-shaped knife (Carter's subcutaneous knife) is introduced from within the nostril at a point between the upper and lower lateral cartilage. By following the excursions of this knife by means of the thumb and index finger placed on the outside of the nose the skin over the entire nose is elevated and a slit is made through the periosteum over the naso-frontal process.

After this extensive elevation of the tissues is accomplished, the piece of rib is placed in its position and anchored under the periosteum over the naso-frontal process. The end of the bone should reach within half an inch of the tip of the nose. The following procedure is the latest modification of my bone-transplantation operation: The patient is prepared as already described and then, instead of transplanting only bone into the nose, that portion of the rib in continuity with the costal cartilage is removed,—one

inch of bone and half an inch of costal cartilage,—so that in reconstructing the nose there is bone arch where that is normal and cartilage where cartilage is normal. Thus we reproduce so much more nearly the natural conditions and the flexibility of the

Fig. 1. Rib transplant with periosteum seven months after operation. Graft is firmly united to frontal bone and has increased in size—(congenital deformity, there was no bony framework in the nose).

tip of the nose is preserved. In four cases where this was done the results have been very satisfactory indeed.

The following three cases were operated upon in this manner:

(3) James O'N.; age, 19 years. The patient has always been strong and healthy and denies specific history. He suffered from

nasal obstruction due to a deflected septum. The submucous operation was performed more than a year and a half ago. Healing from this operation was prompt, but shortly afterward a depressed deformity developed below the ends of the nasal bones. (This case

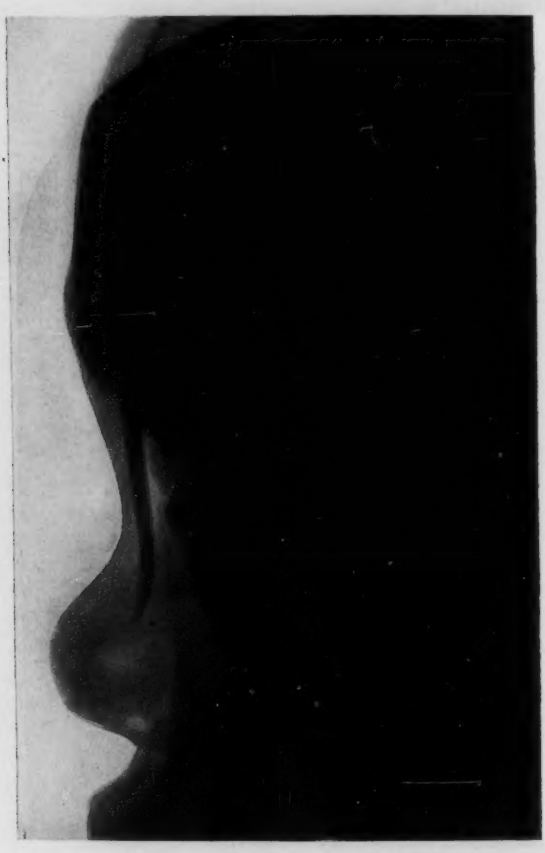


Fig. 2. Section of rib with periosteum 15 months after transplantation. Same case as Fig. 1.

was presented at the January meeting of the Section and it was shown at that time that the deformity was due to the submucous operation, the upper edge of the septum having been displaced from its position between the lateral cartilages.)

Operation. February 15, 1915. One inch of periosteum-covered

rib and half an inch of the contiguous costal cartilage were transplanted through the left naris.

Result. The deformity is corrected and the cartilaginous bridge is normally flexible. The patient was discharged from the hospital five days after the operation.

Fig. 3. Rib transplant with periosteum 20 months after operation. Note canal in center of graft. Same case as Figs. 1 and 2.

(4) F. C. O'R.; age, 20 years. This man is six feet in height, well proportioned, and very strong and healthy. No venereal history. When 6 years of age, while tobogganing, he ran into a tree. His nose was crushed and the nasal bones were, apparently, driven

into the skull. The nose developed broad and flat and nasal respiration was obstructed. This deformity and obstruction was increased by a blow he received in a fight in Southampton six months ago. A submucous operation was performed on April 17, 1914, which relieved the obstruction.

Fig. 4. Rib transplant without periosteum 17 months after operation. Note that graft is practically free in the soft tissues.
There is considerable growth of bone where it rests on the nasal bones.

Operation. August 11, 1914. One inch of periosteum-covered rib and half an inch of the adjacent costal cartilage were transplanted through the left nasal cavity, the periosteum being preserved.

Result. Healing was prompt and the deformity was satisfactorily corrected.

(5) Walter H.; age, 21 years. The patient has choroiditis and is practically blind. His general health has been good and he has never had syphilis. Two months before applying for treatment he

Fig. 5. Rib transplant without periosteum 21 months after operation. Note increase growth. (Same case as Fig. 4).

ran into a post and fractured his nose. The injury was followed by suppuration, resulting in marked deformity of the cartilaginous dorsum of the nose.

Operation. July 18, 1911. Two inches of the ninth rib (split),

without periosteum, were inserted through a U-shaped incision. Seven days after the operation, pus formed at the site of the incision and was evacuated. A small piece of the upper end of the transplant was removed and the wound irrigated. Healing of the wound occurred in three days. The patient was discharged from the hospital

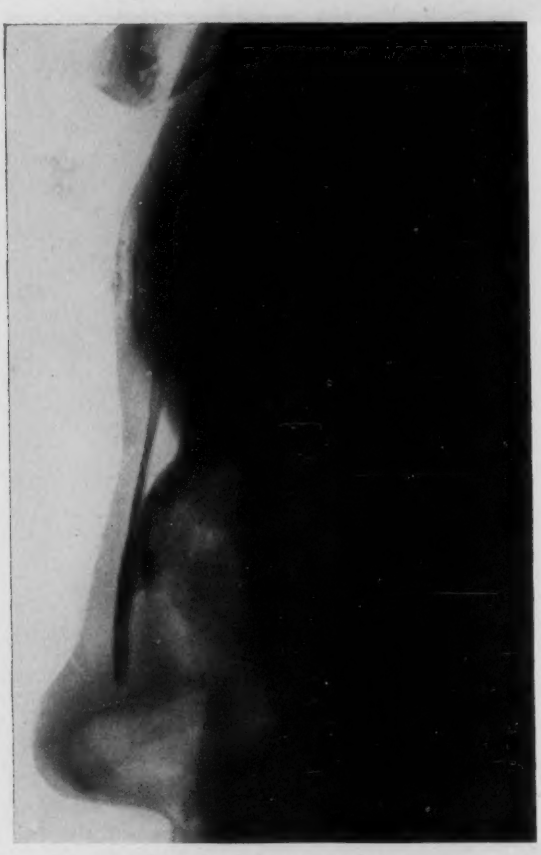


Fig. 6. Rib transplantation without periosteum three years after operation. Same case as Figs. 4 and 5.

sixteen days after the operation. The deformity has remained corrected. The transplant is freely movable in the tissues and has not been absorbed. Growth has occurred in it where it comes in contact with the periosteum covering the nasal bones.

(6) Miss Josephine G.; age, 23 years; no specific history and has always been healthy and strong. Six months before applying for treatment she had a septal abscess following a slight injury to the nose. She was operated upon and several pieces of bone and cartilage were removed. A depressed deformity resulted almost

Fig. 7. Pier constructed from three fragments of rib and used when there was no bone remaining in the nose to support the transplant. Dramatic case.

immediately after the injury, there being a marked depressed deformity below the ends of the nasal bones and some broadening of the bony arch. There was also considerable obstruction to respiration due to the falling in of the nasal bridge.

Operation. January 9, 1915. A split section of the ninth rib about two inches long (periosteum-covered) was inserted into the nasal dorsum through an opening made in the roof of the left nasal cavity. The upper end of this transplant was anchored under the periosteum over the naso-frontal process.

Result. Primary union. Patient discharged from the hospital six days after the operation. Excellent result.

(7) Elizabeth M.; 24 years old. When the patient was three years of age she fell and struck on her nose. The organ developed broad and flat, with practically no bridge. No specific history is obtainable. The patient's general appearance, however, is that of congenital syphilis. The nose is broad and flat with no elevation of the bridge. There is marked atrophic rhinitis and ozena.

Operation. November 6, 1913. Two pieces of rib were used, superimposed, (the curves of the rib being reversed), the outer fragment being covered with periosteum, the inner one being bare.

Result. Primary union. The transplant is firmly united to the frontal bone and a bony union has apparently occurred between the two fragments. Deformity corrected.

(8) Alice W.; 25 years old. The patient suffered from tuberculous glands of the neck from the time she was two years of age until she was nineteen. During this time she also had chronic suppurative otitis media and had to have a mastoid operation performed. Her hearing is now very defective.

In 1902, her nose became swollen and very painful and, after five or six weeks, pus began to discharge from a sinus over the bridge. This discharge kept up for four or five years, small pieces of bone coming away from time to time. Under treatment, the sinus finally healed, the bridge of the nose had been completely destroyed and there was a depressed scar where the sinus had been. The attending physician had made a diagnosis of tuberculosis of the nose.

Examination. The nose was broad and flat and the bridge greatly depressed, there being a large depressed scar where the sinus had been. The bridge of the nose was sensitive to pressure. Wassermann test negative.

Operation. December 23, 1914. The operation was begun with the idea of only grafting tissue in place of the depressed scar, the bone transplantation to be done at a later date. But diseased bone was found and several pieces of considerable size removed. The scar was then excised and a piece of skin and subcutaneous tissue of corresponding size removed from the back of the neck with which to fill in the depression. This tissue grew in nicely, making the skin

of the nose nice and smooth. On February 13, 1915, two pieces of rib about two inches long, and superimposed, were transplanted from within the left nostril and anchored to the frontal bone, the outer piece being covered with periosteum and the inner piece being bare.

Recovery was uneventful. The patient has a very presentable nose with a sufficient elevation of the bridge. The bone is apparently anchored to the frontal bone.

In conclusion, I desire to point out that the original proposition which I offered five years ago has been demonstrated by the cases submitted, viz., that bone, if aseptically and autoplastically transplanted, continues to live and to take part in the local process of repair; that it continues to grow, and that its growth is limited by the physiological requirement of the part.

69 West Fiftieth Street.

Use of Section of Scapula in Correcting Nasal Deformity.
O. A. LATHROP, *Boston Med. and Surg. Jour.*, August 20, 1914, p. 303.

Lothrop reports a successful correction by transplantation of a nasal deformity due to traumatism, in which he selects the scapula from which to gain his tissue. As the tip of the nose was depressed he desired a stiff tissue to place along the nose to hold the tip up in place. For this, cartilage was too flexible and the thin vertebral border of the scapula served admirably. The parts were dissected away, a piece of bone two inches long and one-quarter of an inch wide was bitten off with bone-cutting forceps (the periosteum being carefully left on the fragment) and the whole was inserted along the dorsum of the nose through a small incision under the tip, being passed first subdermally then subperiostally. The two-inch splint became firmly anchored in four weeks. Healing was by first intention. BERRY (MOSHER).

THE END-RESULTS OF RADICAL MASTOID OPERATION.*

DR. S. MACCUEN SMITH, Philadelphia.

The evolution of the mastoid operation comprises one of the most interesting and instructive chapters of surgery. Although the first recorded opening of the mastoid cells was performed by Johannes Riolanus, in 1649, the first *bona fide* mastoid operation was performed in 1858 and reported by von Trölsch in 1861. In the same year Lawrence Turnbull, of Philadelphia, performed the first mastoid operation in America. Between these dates various attempts for the relief of aural disease had been made, but any successes attending them may be called accidents of surgery rather than advances worthy of credit for scientific achievement. Each attempt, however, yielded its mite to the final result. It is interesting to note, in this connection, von Trölsch's conception of the dangers of confined pus, more especially when located within unyielding osseous walls. In his paper of 1861, referred to above, he states: "One of the fundamental principles of surgery, which is slowly gaining ground in internal medicine as well, demands that every retention of pus in the tissues should be given exit as quickly and as thoroughly as possible, by the doing of which alone can be avoided gravitation abscesses, extension of the inflammation, and the injurious action of the same on the neighboring parts. The principle is to be the more emphasized and brought the more conscientiously into application according to the importance of the tissue and place in which such suppurations occur. I know of scarcely a part in the human organism which, in all directions, is so surrounded by important parts and organs, and in which accumulations of pus should be so carefully avoided, as is the case with the middle ear."

The summary of principles here laid down is just as pertinent today as when uttered over half a century ago, and this comprehensive statement of von Trölsch was the foundation upon which much of the structure of modern surgery, and particularly aural surgery, is built.

As early as 1868 Jacoby, of Breslau, who first opened the cells by means of a drill, divided his cases of aural suppuration into two classes requiring operative intervention—one in which the cortex was manifestly involved, and the other in which there was little or

*Read before twenty-first annual meeting of the American Laryngological, Rhinological and Otological Society, June 15, 16, 1915, Chicago, Ill.

no cortical disease. Modern otology wholly confirms Jacoby's classification and at the same time shows the folly and danger of waiting for the manifestations of carious cortical erosion before instituting operative procedure.

Jacoby's fourth indication for operation is the first recorded intimation we have of the advantages of opening the mastoid for the cure of chronic otorrhea. During the next ten years various men, notably St. John Roosa and Orne Green, advocated diverse methods for the relief of surgical mastoditis, until Schwartze, on account of his unsatisfactory results, definitely advised against opening the mastoid for the cure of chronic otorrhea, except where the *indicatio vitalis* demanded such a procedure.

In Schwartze's noteworthy book, "The Surgical Diseases of the Ear," published in 1885, he advised opening the mastoid for the cure of chronic suppuration, in the absence of other symptoms. Roosa, in the first edition of his work, which also appeared in 1885, confirmed this observation.

In Küster's publication, in 1889, we have recorded the first definite suggestion of what subsequently became known as the radical mastoid operation. In this he states that the rational treatment of chronic middle-ear suppuration must be based on the surgical principle that a diseased bony cavity should be opened up extensively, all diseased tissue removed and the source of the suppuration brought clearly to light. Only when this is done are the surgical requirements fulfilled. He, therefore, proposed chiselling away the back wall of the meatus, converting the external auditory canal, mastoid antrum and cells and middle ear all into one cavity.

In the same year Stacke, in support of Küster, and in reply to the severe criticisms of von Bergmann, says: "Otology is an offshoot of surgery, and only in close adherence to it and in the true and conscientious observance of its principles is success to be sought for and to be found. . . . The most important principle is the establishment of free, unhindered, spontaneous drainage. Incomplete drainage, and, as a consequence, further and deeper bone disease, is the cause of the difficulty in the healing of middle-ear suppuration."

In 1891 Stacke made public his new method for opening the mastoid for the relief of chronic suppuration. With various modifications, the Stacke operation is the one universally accepted today, and this leads us to a consideration of its end-results.

It is not germane to the subject of this paper to enter into a discussion of the indications for performing the radical mastoid operation; it should be understood, however, that we have operated

only on those cases that have utterly failed to respond to persistent non-operative treatment, and in cases presenting symptoms requiring immediate operation, although I believe, as a rule, the end-results are likely to be very much better, especially in point of hearing, when the operation is performed reasonably early. In a large percentage of these chronic cases the middle fossa is found to be unusually low, the sinus in some instances being so far forward as to occupy the greater part of the antrum; hence the advantage of an X-ray photograph to determine these points, more particularly the position of the sinus, which can always be definitely located.

In accepting an invitation to prepare this paper, I did not appreciate the difficulty that would confront me, particularly in arriving at a relatively accurate conclusion as to the end-results of the radical mastoid operation, from the fact that a goodly number of patients written to failed to comply with the request for an examination. Letters were sent to three hundred and thirty-four patients, of whom about two-thirds responded.

Suppuration had completely subsided in a large percentage of cases, and in those in which there still continues to be a discharge, although it may be more or less recurrent in type, it arises from the tympanic cavity, involvement of the latter usually being due to the Eustachian tube becoming patulous.

I found it difficult to determine definitely how long a time was required for complete dermatization. It is of interest to note that some of the patients had not been treated since they ceased thir hospital visits, which continued, in some instances, not longer than four to six weeks, the patients claiming that they did not return for treatment from the fact that their ears had ceased to discharge and they assumed that they were well. An examination of some of these cases showed complete dermatization, an improvement in their hearing, entire absence of all head symptoms, and, curious to note, not the slightest accumulation of desquamated epithelium, the time of examination varying from two to fourteen years after operation.

The duration of the otorrhea before operation ranged from about one year to forty-seven years. In fifteen per cent of the cases the discharge had continued for a period under ten years; in thirty-four per cent it had been present from ten to twenty years, and in fifty-one per cent its duration was over twenty years.

The average time necessary for after-treatment varies considerably in private cases, as compared with those in attendance upon our out-patient hospital service. About three months would seem to be a fair average for the latter. This time is considerably reduced among private patients, even in the absence of skin-grafting.

So far as I am able to estimate, it appears that our out-patient service obtains complete cessation of all discharge in about eighty per cent of the cases, while this percentage can safely be increased to ninety-five per cent or better in private work. The difference in percentage in this classification seems to be attributable entirely to the irregularity with which the dispensary patients present themselves for post-operative care, which necessarily results in considerable neglect. Unquestionably the time of repair is lessened materially by the use of skin-grafting, some of the reported recoveries being amazing in their rapidity.

Even though the discharge does not entirely cease, and though hearing might be more impaired than before operation, the fact remains that I have never seen an intracranial complication develop after a radical operation has been performed. Almost without exception these patients will improve in general health, it being not uncommon, in cases where the chronic otorrhea was of a number of years' duration, for the patients to state that they had never before realized what robust health really was.

Owing to incomplete records, I am unable to state definitely the percentage of intracranial or labyrinthine involvement discovered at the time of operation, though unsuspected before, but in general terms I can state that such discoveries are not infrequent and almost invariably complicate the recurrent type of chronic discharge.

In point of age, the cases ranged from one year to over fifty years. By far the largest percentage were between the ages of twenty and thirty; in other words, this decade would seem to be, so far as aural discharge is concerned, the "age of discretion," due, no doubt, to susceptibility to Cupid's darts at this time of life and the consequent wish to be relieved of an otorrhea for esthetic reasons only, with little or no realization of its dangerous potentialities. It should be noted that a goodly number of these patients, usually at the suggestion of the attending physician, sought relief for some more or less obscure though possibly serious symptoms, such as vertigo, severe head pains, or a general lassitude which did not yield to other forms of treatment. Practically all of our ward cases are of this type.

I experienced considerable embarrassment on discovering that in many instances no accurate record had been kept of the patient's hearing before operation, and in making comparisons I was compelled to depend, many times, on the statement of the patient or his relatives or friends. However, even this crude test is not without its value, especially when patients will voluntarily state that

the ear operated upon is the one upon which they depend for much, and in a few instances most, of their hearing.

Generally speaking, the degree of hearing depends on the condition of the tympanic wall, more particularly whether the round or oval window has been disturbed during the operation; in other words, if the functional activity of the internal ear remains the same as before operation, the hearing of the average case should be as good after this surgical procedure as before.

We have a record of thirty-two per cent of operated cases in which the hearing is definitely better; in forty-nine per cent it remains relatively the same; of the remaining nineteen per cent, in eleven per cent the hearing decreased after operation, according to actual records, while in the balance, or eight per cent, it decreased according to the statement of the patient, no record existing of the hearing previous to operation.

It is interesting to note that in most of the patients whose hearing decreased, said impairment was gradual in development, and may, therefore, have represented the natural impairment of hearing incident to a continuation of the pathologic changes arising from a former chronic otorrhea.

We are justified, therefore, in most instances, in stating that the operation is not likely to result in an impairment of hearing, though there are some exceptions to this rule. Occasionally granulation tissue will spring up, covering the tympanic wall and ultimately forming a solid fibrous layer which will injure the hearing power. In some of my earlier cases, I am confident that the subsequent loss of hearing was due to the crude method of skin-grafting employed. This, however, could probably be avoided by the use of modern methods.

Should the hearing be markedly worse immediately following operation, it would seem to indicate that some injury to the perceptive apparatus has been caused by the operator. These cases, however, should not be confused with those showing a slight temporary impairment of hearing following the radical mastoid operation, due to the general trauma incident thereto.

Bell's palsy is infrequent but perhaps unavoidable at times, owing to an abnormal course of the tympanic branch of the facial nerve. In my series, three palsies developed before operation and eight subsequent thereto. Two of these latter cases improved only slightly. Of the remaining six, four entirely recovered and two approximately so.

The radical mastoid operation should be regarded as a major procedure. Especially is this true when we consider the oppor-

tunities for causing irreparable damage. Nevertheless, this operation is not only safe, in the hands of competent operators, but is usually productive of a maximum amount of good, and is, therefore, wholly justified. It must be borne in mind that the radical operation is frequently performed as the first step for the relief of an intracranial lesion. The recorded mortality, therefore, is no doubt due to the complication present and not to the procedure itself. I do not recall a single death occurring in my own practice which could not be attributed to an intracranial complication, in the treatment of which the mastoid operation was the initial step.

If a chronic otorrhea has its origin in the mastoid antrum or lower cells, it can only be relieved, as a rule, by a mastoid operation. Ossiculectomy and the various methods of treating or closing the Eustachian tube will at times bring about a cessation of otitic discharge, but this can only be anticipated when the tympanic cavity or the tube is the site of the disease, and not the mastoid process.

1429 Spruce Street.

X-ray in the Treatment of Graves' Disease. T. G. MOORHEAD, *Dublin Jour. of Med. Sci.*, November, 1914.

That exposure to x-rays produces fibrosis of the thyroid gland in Graves' disease has been proved by examination of portions removed by operation from cases which had previously been treated by x-rays, and Kocher has stated his belief that a short course of x-ray treatment diminishes the risk of operation by causing contraction of the vessels and so lessening hemorrhage. The author has employed x-ray treatment alone in nine cases of which six underwent a complete course consisting of a daily exposure for about six weeks. Of these, five cases were completely cured so far as symptoms were concerned. The gland in each of them remained somewhat enlarged but was felt to be firm and fibrous. In three of the cases the blood, which before treatment showed an excessive lymphocytosis, returned to normal. GUTHRIE.

REPORT OF A CASE SHOWING THE BIPOLAR ORIGIN OF THE FAUCIAL TONSIL.*

DR. N. SCHOOLMAN, Chicago.

Case J. M., 36 years old, tailor, married, wife and children well. Had diphtheria and scarlet fever in childhood. He came to the infirmary for a slight mycotic tonsillitis. On inspection the throat shows the following unusual conditions: On the right side the tonsillar fossa is occupied by two tonsillar masses which are of fairly large and equal size and completely separated by a deep transverse recess. A large lymphoid mass is situated at the pharyngeal aspect of the posterior pillar and, seemingly, in continuation with the upper tonsil. So that it appears as if the posterior pillar passed in front of the upper tonsil, allowing a portion of it to escape behind it freely into the throat. On the left side the conditions are similar with the exception that the left lower tonsil is considerably smaller than the upper and seems to have undergone involution.

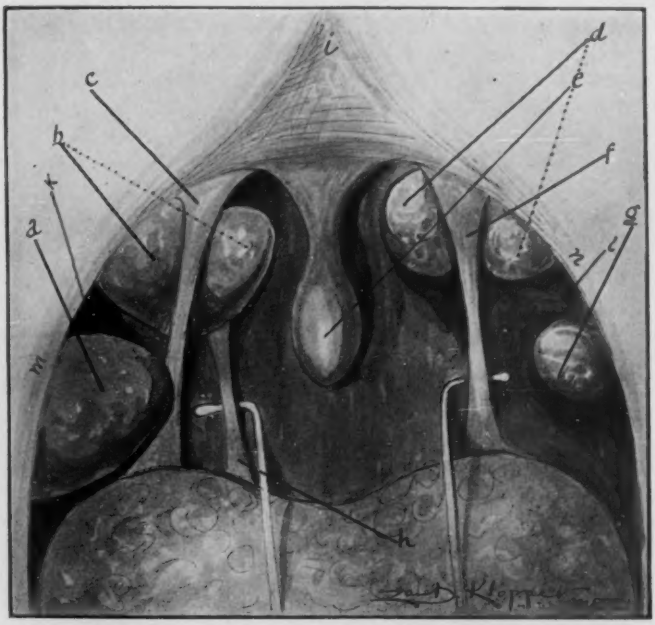
This case as stated, gives a history of a severe throat infection in childhood, and the natural inference would seem to be that we have here the results of some extensive process of necrosis. It is difficult, however, to conceive of a throat lesion that would split a tonsil in half and produce symmetrical conditions on both sides of the throat. Moreover, the space intervening between the tonsillar masses is lined by normal mucous membrane and free from cicatrical tissue or adhesions. It is therefore not unlikely that we are not dealing with a pathological specimen here.

Another possible interpretation of this case is suggested by the studies of L. Gruenwald regarding the bipolar fetal origin of the faucil tonsil. A brief reference to this author's researches, published in the 28th volume of the Archiv für Laryngologie und Rhinologie, might therefore be of interest in this connection.

From an analysis of many series of fetuses in the human as well as in other mammalia, Gruenwald found that as early as the beginning of the third month of fetal life, folds appear on the second bronchial arch which gradually enclose and delimit a portion of the second bronchial cleft, which soon becomes the scene of tonsillar formations. These folds are later known as the arcus palatoglosus

*Read at the meeting of the Illinois Charitable Eye and Ear Infirmary Society, April 16th, 1915.

and palatopharyngeus, and the area which they enclose, far from being an uniform fossa, is early marked off by a transverse septum into an upper, deeper and narrower portion, the fossa tonsillaris, and a lower, wider, and shallower part, the sinus tonsillaris. In these two distinctly separated areas tonsillar growths appear; in the upper in the form of epithelial ingrowths, forming crypts followed by lymphoid infiltration, starting in the upper part of



Right: m, anterior pillar; a, lower tonsil; l, upper tonsil; dotted line, lymphoid mass; c, posterior pillar; k, recessus intertonsillaris; h, pharyngeal band.

Left: n, anterior pillar; s, lower tonsil showing involution; dotted line, upper tonsil; d, lymphoid mass; f, posterior pillar; l, recessus intertonsillaris; e, bullous uvula; i, v-shaped hard palate.

the fossa and progressing downwards towards the transverse septum. In the lower, in the form of lymphoid agminations, with less marked epithelial crypt formations, starting in the lower part of the sinus and progressing upwards. Thus he finds at about the sixth month of fetal life, two tonsillar masses approaching each other from opposite points of origin and remaining distinctly apart. The space intervening between the upper tonsil and

the palatal arch he terms, recessus palatinus, and the one between the upper and lower tonsil, recessus intertonsillaris. He also finds that these tonsillar masses possess histological differences, the lower tonsil partaking so much of thymus characteristics, that he ventures to call it an undeveloped and retrogressive thymus.

This is the picture which Gruenwald constantly meets in fetal life, and less constantly in early childhood. In later childhood and in adult life, however, this picture is altered and obscured through the following causes: 1st, the two tonsillar masses advancing towards each other commonly overleap the boundary line and merge into each other; 2nd, the transverse septum will frequently be pushed back and partially obliterated; 3rd, there is a tendency for one tonsil to undergo involution and only one, usually the upper, less frequently the lower, to develop. There is, however, seldom a case where all traces of original conditions are obliterated. Thus there will usually be found a transverse band of mucous membrane, the plica transversa, to mark the place of the original dividing line in cases of merged tonsils, and in the instances where one only is developed, the plica transversa will usually be found either above or below the tonsil, depending on whether it is the upper or the lower which has developed.

Viewed in this light the present case may be considered as an interesting instance of persistence of embryological formations in adult life to an unusual degree. It not only shows distinct tonsillar masses separated by the recessus intertonsillaris, but also the process of involution which Gruenwald refers to is well illustrated in the left lower tonsil. In addition, this case presents some other points of interest, namely: A high V-shaped palate, a bulbous uvula, and two longitudinal bands of mucous membrane infiltrated with lymphoid deposits running along the postero-lateral aspect on either side of the pharynx down to the epiglottis. These bands are free in part of their course and may be lifted by a probe. They are possibly the plicae pharyngo epiglotici.

In conclusion, I wish to express my thanks to Dr. Pierce who has advised the presentation of this case, and suggested the title of this subject.

1616 West Twelfth Street.

THE CHORDA TYMPANI NERVE IN OTOLOGY.*

DR. CHAS. E. PERKINS, New York.

My attention has been called to the consideration of the chorda tympani nerve and the part it plays in otology by the following cases: (1) A case reported in full before the New York Academy of Medicine in which, during the radical operation, there were repeated facial contractions. There was a large chorda tympani, the twitching being due to mechanical irritation of the facial transmitted through the chorda. (2) A case of ossidectomy, personally communicated by Dr. Dench, in which the chorda was exceptionally large and strong so that traction upon it caused disturbance of the facial nerve with paralysis. (3) A case in which doubt arose as to whether a facial paralysis coming on immediately after a mastoid operation was due to severance of the nerve at the tip or to some condition higher up. In such a case an early test of taste sense if properly performed would settle the problem.

The chorda tympani is really an external branch of the facial. At birth it leaves the facial immediately as it emerges from the stylo-mastoid foramen and passes beneath the periosteum on the surface of the mastoid until it reaches the posterior end of the tympanic ring beneath which it passes through a short canal, the *iter chordae posterious,* which will become lengthened and more deeply placed in the further development of the bone. The further course of the nerve is well known. If one holds the adult bone so that the stylo mastoid foramen is illuminated, the fallopian end of the posterior iter can readily be seen and a bristle passed through it.

In formulating a plan of procedure to test the sense of taste and thus ascertain the condition of the chorda tympani one finds very little aid in English literature, but several German writers have gone quite thoroughly into the subject. (Schultz,[1] Kander.[2]) The threshold stimulus varies on different parts of the gustatory surface. Thus a weaker solution of sugar will be interpreted as sweet on the anterior surface of the tongue than if applied to the posterior part, the soft palate or fauces and the converse is true of quinine sulphate in eliciting the sensation of bitter, so also acid and saline have their areas of minimum threshold stimulation. But as in these tests we are looking for absolute loss of taste on the anterior two-thirds

*Read before the forty-eighth annual meeting of the American Otological Society, June 3, 4, 1915, at Niagara Falls, Canada.

of the tongue we are not concerned with the threshold stimulus, but use solutions sufficiently strong to elicit in a normal condition almost immediate response if applied to any part of the gustatory surface. I have used simple syrup, 25 per cent solution of tartaric acid, 25 per cent solution of sodium chloride and saturated solution of quinine sulphate, thus ascertaining the primary tastes of sweet, acid, saline and bitter. The solution is applied with a cotton applicator.

If the patient protrudes his tongue and we apply our solution to its anterior two-thirds and he is asked to state his sensation, in doing so he will spread the solution over other parts of the gustatory surface and our finding will be without value. Therefore we have a chart with words in large type—sweet, sour, salty, bitter, and the patient is directed to point to the sensation experienced. The tongue meanwhile remains in its original position, the solution is not disseminated and our experiment is of value. Between each test the mouth is rinsed and sufficient time to let the taste pass away is allowed to elapse. Children under ten and stupid persons cannot be accurately tested. They were, therefore, excluded from my experiments.

Cases after the radical operation show complete loss of taste in the anterior two-thirds of the tongue on the operated side. I have made twenty tests in these cases and find this the invariable condition. In about one-third of the cases there was more or less loss of taste perception on the posterior third of the tongue, soft palate or fauces; either loss of one or more tastes or misinterpretation of the sensation. This is supposed to be due to involvement of the tympanic plexus. It seems very probable that this plexus would not escape destruction in the radical operation as now performed. We must conclude that since in but one-third of the cases we find this evidence of its involvement it is not invariably a gustatory path.

In ossidectomy cases there is invariably loss of taste perception in the anterior two-thirds of the tongue on the operated side. This we would naturally expect as the nerve lies between the malleous and incus and would necessarily be ruptured during their removal.

In chronic middle-ear suppuration as well as in the residual cases, ageusia, showing involvement of the chorda, is present in more than fifty per cent. Sometimes we also find evidence of tympanic plexus involvement. In some of these cases the patient will retain perception for one or more tastes, others being absent, or he will misinterpret them, showing, perhaps, that the nerve is but partially affected.

In acute middle-ear processes before incision of the membrana tympani the nerve is generally intact, although I found perversion of taste or loss of one of the tastes in about 20 per cent of the cases. Thus, one patient interpreted sweet as bitter; to several the salt solution seemed sour or bitter, showing partal involvement of the chorda. Ten of these cases were tested after myringotomy and showed no change. I had believed that destruction of the chorda was a common occurrence in this operation but these experiments prove that this is not the case. In order to cut the chorda the knife would have to travel along the internal tympanic wall well into the Sharpnell's membrane. This would perhaps endanger the oval window and its contents and also the facial nerve. In later stages of acute otitis the chorda is more frequently involved but not nearly as often as in chronic processes.

Neurologists make use of taste tests to aid in locating the lesion and forming a prognosis. Nuclear facial paralysis gives normal taste. Here we have also absence of involvement of the orbicularis palpebrarum, corrugator supercili and anterior belly of the occipito-frontalis as their nerve-supply is from the nucleus of the third, the filament to them joining the seventh just before it leaves the pons. Involvement of the nerve at the base has been reported without loss of taste by Erb,[3] Ziemssen,[4] Wachsmuth[5] and others, and with loss of taste by L. Bruns,[6] Lehman[7] and others.

If the lesion is in the fallopian canal, and this, of course, includes all cases of otitic origin, there will be ageusia. Even if involved at the stylo-mastoid foramen there will be sufficient swelling to impair the function of the chorda. A fact readily deduced from a consideration of the anatomical arrangement. Palsies arising from pathological conditions peripheral to the stylo-mastoid foramen give absence of ageusia. This comprises a large class of cases attributed to rheumatism, taking cold, drafts of air, etc., with a lesion in the neck near the foramen and together with those cases arising from the same causes with a lesion at the stylo-mastoid foramen called Bells palsy—a term no longer used by neurologists or others desiring to be exact. In the cases originally reported by Bell,[8] ageusia was present. Erb[9] reported twelve cases of rheumatic facial paralysis in ten of which taste sense was unimpaired. I am informed by Dr. Neustaedter, who invariably makes tests of the taste sense in every case of facial palsy coming into his clinic at the University and Bellevue Hospital Medical College Dispensary, that cases without ageusia are more certain to recover and the duration of the condition is shorter than in cases showing chordal involvement.

Bellingeri,[10] in 1818, first suggested that the chorda tympani probably had some gustatory function. Claude Bernard,[11] in 1843, proved that it was a gustatory nerve supplying the anterior part of the tongue, a conclusion since verified by many observers with various methods.. All agree that the taste path for the anterior two-thirds of the tongue is through the chorda tympani and facial to the geniculate ganglion as to its path from here to the central connection. Difference of opinion has existed and perhaps still does exist, as it seems almost impossible to reconcile the evidence. The most direct way would be for the taste fibres to pass through the pars intermedia of Wrisberg to the glosso-pharyngeal nucleus. This theory is apparently combatted by the following considerations:

(1) The occurrence of facial paralysis from basal lesions without ageusia.

(2) Lesions affecting the fifth at or near the Gasserian ganglion are regularly accompanied by ageusia in the anterior two-thirds of the tongue.

(3) Schiff[12] has cut the fifth near the Gasserian ganglion and produced ageusia in dogs.

(4) Extirpation of the Gasserian ganglion produces loss of taste on the anterior two-thirds of the tongue on the operated side.

(5) A case was reported by Ferguson[13] in which a patient with chordal ageusia was found post mortem to have an exostosis in the Vidian canal with degeneration of the great superficial petrosal.

These observations are supposed to prove that the chordal taste fibres reach the brain through the fifth nerve going from the geniculate ganglion through the large superficial petrosal and vidian to Meckels ganglion thence in the second division of fifth to the brain and perhaps a part also through the small superficial petrosal to the otic ganglion and thence in the third division of the fifth to the central connection. Gowers,[14] after a study of the Gasserian ganglion operations of Horsley and Ballance endorses this indirect path theory.

Cushing,[15] in 1903, from a careful study of thirteen of his cases of extirpation of the Gasserian ganglion and after making repeated taste tests in each individual case, arrives at the following conclusions:

(1) "That the perception of taste is unaffected on the posterior portion of the tongue and never permanently or completely lost on its anterior two-thirds after removal of the Gasserian ganglion.

(2) "That a temporary abolition or lessening of the acuity of taste may be found to exist over the anterior and anesthetic portion of the tongue for some days after the operation.

(3) "That this temporary loss of function may possibly be occasioned by some interference with chorda transmission brought about by a mechanical or toxic disturbance due to degeneration of the lingual nerve.

(4) "That a lesion of the trigeminal nerve may be associated with disturbance of taste over the chorda territory without the necessary inference that the nerve is a path for gustatory impulses.

(5) "That the trigeminal nerve in all probability does not convey taste fibres to the brain either from the anterior or posterior portion of the tongue."

I feel inclined to accept these conclusions based as they are upon such accurate and painstaking work.

As to the path for taste fibres in the tympanic plexus a number have been suggested with no prospect of accurately determining the truth of the matter.

This is readily accounted for when we consider that the plexus has three connections, each one known to contain taste fibres, viz., the glosso-pharyngeal nerve, the geniculate ganglion and, through the ramus communicans, the chorda tympani.

BIBLIOGRAPHY.

1. SCHULTZ: Arch. für ohrenhulk, Vol. 79, p. 220.
2. KANDER: Arch. für ohrenhulk, Vol. 68, p. 69.
3. ERB: Deutsch Arch. für Klin. Med., 1870, Vol. 7, p. 247.
4. ZIEMSSEN: Virchows Archiv. Bd. 13, p. 213.
5. WACHMUTH: Neber progressive Bulbar paralyse, p. 21.
6. BRUNS: Arch. für Psychiatrie, 1889, Bd. 20, p. 495.
7. LEHMAN: Pflügers Arch. für Physiol., 1889, Supplement, p. 36.
8. BELL: Quoted by Erb—see 9.
9. ERB: Deutsch Arch. für Klin. Med., 1875, Vol. 15, p. 6.
10. BELLINGERI: De Nervo Facei., 1818.
12. SCHIFF: Quoted by Kander, see 2.
11. CLAUDE BERNARD: *Journal de l'anaton, de la phys et de la path, de systeme nerveaux*, 1843, 1 p. 408.
13. FERGUSON: *Medical News*, Phil., 1890, Vol. 57, p. 395.
14. GOWERS: *Journal of Physiology*, Vol. 28, July, 1902, p. 300.
15. CUSHING: *Johns Hopkins Hosp. Bul.*, 1903, 14 p. 71.

127 West Eighty-second Street.

TRANSITIONAL EPITHELIUM IN THE RHINO-PHARYNX.*

DR. W. SOHIER BRYANT, New York.

In an effort to determine the boundary lines between the squamous epithelium and the ciliated epithelium of the rhinopharynx, an examination was made of the rhinopharynges in the domestic rabbit (eight individuals), in the guinea pig (three individuals), in the domestic cat (four individuals), in the macacus and cebus monkeys (one each), and in man (twelve individuals; adults, children, infants and fetus).

The search for these boundary lines demonstrated the presence of a third variety of epithelium (mentioned by von Ebner[1]) which, in the character of its cells, is intermediate between the squamous cells and the ciliated columnar cells. This epithelium which occupies the transitional zone between the epithelium of the oropharynx and that of the nasal fossae, is composed of cuboid cells with either imperfect cilia or no cilia at all.

In all the specimens examined, the squamous epithelium extends as far forward as the fossae of Rosenmuller, the intermediate zone of the epithelium occupies the region of the orifice of the Eustachian tubes, while the ciliated columnar epithelium extends a variable distance backward, approaching the Eustachian tubes.

The intermediate zone of the epithelium lies in a wavy ring around the rhino-pharynx. It bends forward on the anterior and the posterior walls, and backward on the lateral walls at the attachment of the posterior faucial pillars. The zone includes interdigitations and islands of the neighboring varieties of epithelium.

The boundaries of the intermediate zone of epithelium vary in position, as stated by von Ebner, but these boundaries, I find, contrary to von Ebner, are constant inasmuch as they vary between fixed limits. In the several species examined, the variations have specific limitations.

1. In the rabbit, the anterior border of the transition extends far in front of the Eustachian orifices. The posterior border reaches these orifices.

2. In the guinea pig, it ends anteriorly a short distance in front of the Eustachian orifices, and posteriorly a short distance behind these orifices.

*Read before the forty-eighth annual meeting of the American Otological Society, June 3, 4, 1915, at Niagara Falls, Canada.

Fig. 1. Human Pharynx. Adult.

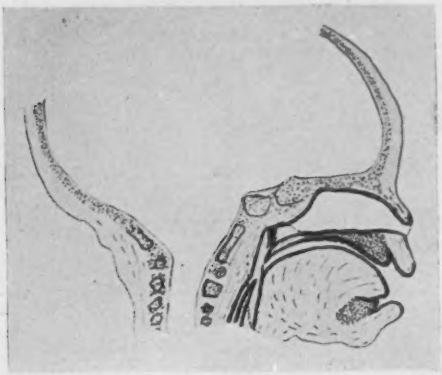


Fig. 2. Human fetus at term. The band of intermediate epithelium extends a little farther back than in the adult.

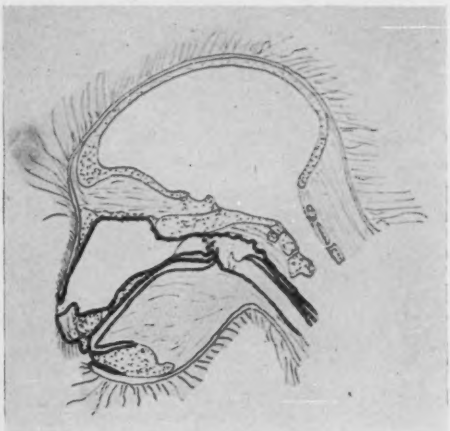


Fig. 3. Macacus monkey. The band of intermediate epithelium lies behind the Eustachian orifice.

Fig. 4. Cebus monkey. The band of intermediate epithelium lies behind the Eustachian orifice.

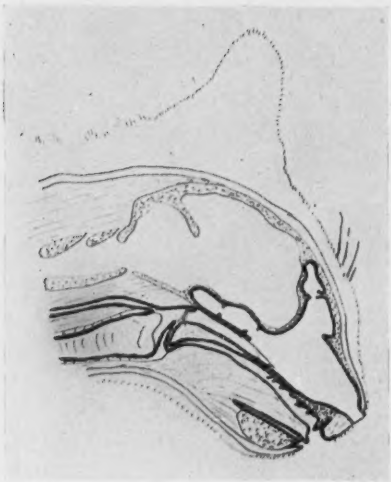


Fig. 5. Domestic cat. The band of intermediate epithelium lies behind the Eustachian orifice.

3. In the cat, its anterior border crosses the Eustachian orifices, while its posterior border is a short distance behind these orifices.

4. In the cebus and macacus monkey and in man, the position of its anterior and posterior boundaries resembles very closely that found in the cat.

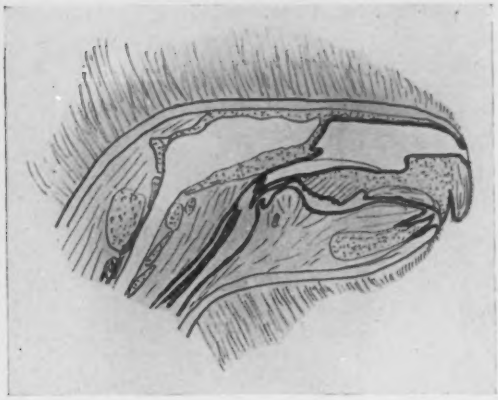


Fig. 6. Guinea pig. The band of intermediate epithelium lies across the Eustachian orifice.

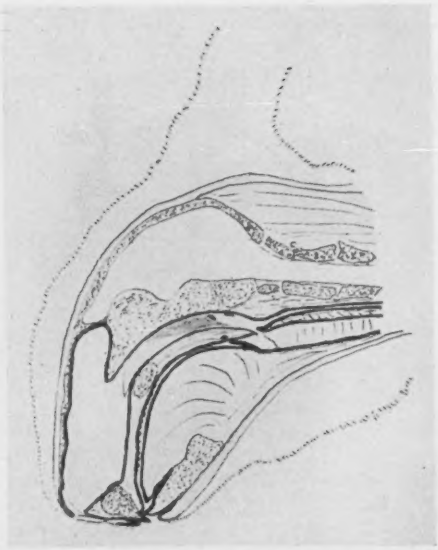


Fig. 7. Domestic rabbit. The band of intermediate epithelium is wide and lies in front of the Eustachian orifice.

The intermediate zone is seen to extend farthest forward in the rabbit, and farthest back in man.

The figures presented here are diagrammatic, projectoscopic outlines of vertical antero-posterior sections of the head with the nasal

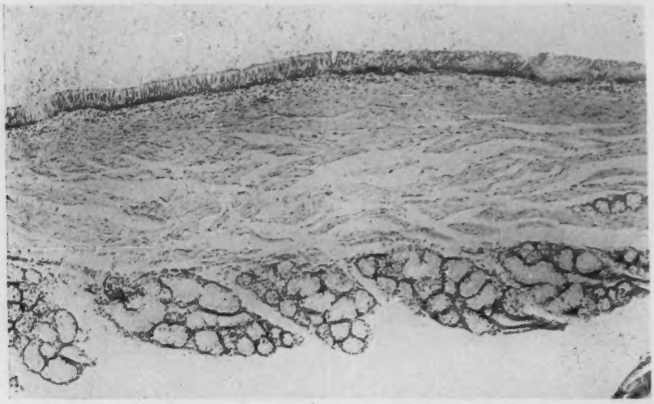


Fig. 8. Back wall of rhino-pharynx of rabbit shows transition of squamous epithelium on the right to ciliated columnar epithelium on the left. Mucous glands below.

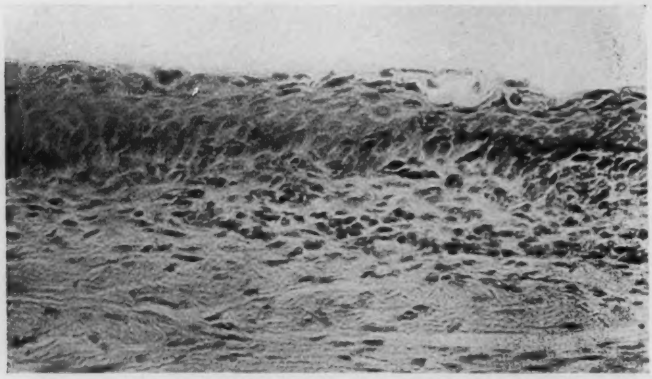


Fig. 9. An enlargement of No. 8, showing ciliated columnar cells on the left, changing to cuboid cells on the right. Rabbit.

septum preserved. The shaded lines represent the cut edges of the mucous membrane. The blue area represents the band of intermediate epithelium between the ciliated columnar epithelium and the squamous epithelium.

The intermediate epithelial band (represented by blue area) extends forward on the back wall nearly to the septum, and backward nearly to the angle of the rhinopharynx. It passes over the Eustach-

Fig. 10. Epithelium from back wall of fossa of Rosenmuller, showing squamous cells on right and short columnar non-ciliated cells on left overlying lymphoid tissue. Transition of squamous to cuboid epithelial cells. Human.

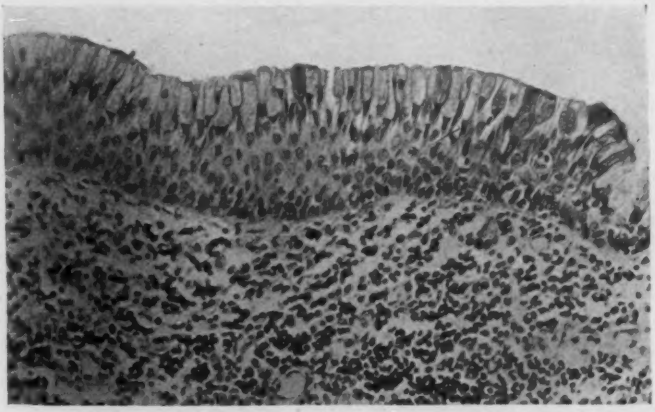


Fig. 11. Short columnar non-ciliated epithelium from back wall of fossa of Rosenmuller overlying lymphoid infiltration. Human.

ian tube and inclines backwards at the union of the soft palate with the lateral wall. It then inclines forward to a point near the nasal septum on the floor of the rhino-pharynx.

The following figures are microscopic sections stained with haematoxylon and eosine.

The position of the transitional band obviously changes with the variation in the upper limit of the peristaltic digestive tube. We observe that it extends farther forward in the lower extreme of the mammalian scale, the rabbit, than in the higher extreme, man; also that the width of the band is greatest in the rabbit, and least in man. Associated with these differences, possibly in a causative relation, the peristaltic digestive tube extends farthest forward in the rabbit, and farthest back, at its anterior end, in man. The posterior border of the intermediate zone in the same position in all these forms of mammals, at a point where the mucous membrane begins to be exposed to food and digestive fluids. Its anterior border lies where the peristaltic motion starts.

This holds good for man, although in the adult we find there is a considerable area of squamous epithelium on the posterior pharyngeal wall between the posterior border of the transitional epithelial ring and the anterior commencement of the peristaltic tube. In the human fetus, this interval between the ciliated epithelium and the anterior end of the peristaltic tube, does not exist.

The position and extent of this transitional band is just what is required to cover the area between the free air portion and the repeatedly washed portion of the rhino-pharynx; that is, the alternately washed and aired portion of the naso-pharynx, between the portion which is only aired and the portion which is exposed to the materials of digestion. This area is, however, wiped at the time of swallowing, by the peristaltic contractions of the tube.

We readily appreciate the clinical and pathological importance which the unprotected area of naso-pharyngeal mucous membrane presents in adult man. The area is covered by stratified squamous epithelium, but is not protected by the peristalsis of the tube.

Clinical experience has taught us that different kinds of epithelial surfaces do best with different kinds of treatment. The post-nasal ciliated epithelium, the firm, buccal, stratified, squamous epithelium, the thick, soft, esophageal, stratified, squamous epithelium, etc., differ in resistance and reaction to re-agents. In the same way the naso-pharyngeal ciliated epithelium, the intermediate epithelium and the rhino-pharyngeal stratified squamous epithelium differ in sensibility and reaction. The ciliated aerial epithelium is very delicate and sensitive, reacting readily to very weak solutions, while the resistant, thick, stratified epithelium of the naso-pharynx is as resistant almost as the mouth.

Furthermore, it has been observed, clinically and experimentally, that when ciliated epithelium has been destroyed over an area, it does not become wholly replaced, but its place is taken by stratified, squamous epithelium which remains permanent.

These observations should warn us of the damage which is invariably done by strong reagents to the ciliated region of the rhino-pharynx.

The physiological protective mechanism of the mucous membrane of the rhino-pharynx works in this way: the mucus, with adherent particles and fluids lying on the ciliated naso-pharyngeal membrane, is wafted forward and expelled at the anterior nares. The fluids and solids and mucous secretions on the intermediate and squamous areas are squeezed backwards by the peristaltic action of swallowing.

This theory supposes that the peristaltic tube in the lower animals overlaps the ciliated tube. In adult man this overlapping does not exist, since there is a wide area of intermediate epithelium and squamous epithelium between the ciliated area and the commencement of the peristaltic tube. This area is dependent on the flow of mucus aided by gravity to cleanse itself. When the mucus becomes abnormally viscid, retroaspiration of the naso-pharynx is resorted to. This action is useful in removing viscid mucus, but it roughens the cilia the wrong way to some extent. The pathological degenerate act of retro-aspiration of the naso-pharynx exists in none of the mammals except in man.

It is obvious that this unprotected condition of the intermediate and squamous area anterior to the peristaltic tube in man, offers a greatly diminished resistance to the entrance of (all) systemic infections which usually commence at this point.

BIBLIOGRAPHY.

1. Von Ebner: Schlundkopf—Pharynx. Koelliker's Handbuch der Gewebelehre des Menschen, IX Edition, Leipsic, 1902, Vol. 3, p. 127.

2. These observations were made in the Pathological Laboratory of the Manhattan State Hospital through the courtesy of Dr. William Mabon, Superintendent, and Dr. Clarence O. Cheney, Pathologist.

19 West Fifty-fourth Street.

SIMPLE INFLAMMATORY STENOSIS OF THE ESOPHAGUS.*

DR. RICHMOND MCKINNEY, Memphis, Tenn.

The development of esophagoscopy has broadened the study of esophageal strictures, and has resulted in numerous contributions to the literature of this subject during recent years. The work of Jackson, Plummer, and other clincians in America, has been in advance even of that of our European confreres in throwing light upon the character and treatment of these strictures, and as the technic of esophagoscopy grows more and more familiar to a larger number of physicians, investigation of strictures of the esophagus has assumed increasing interest.

The classical grouping of strictures of the esophagus heretofore has been, first, those due to malignancy; second, those due to traumatism, such as the erosion of chemical caustics; and third, those due to cardiospasm. That there could be a chronic stenosis of the esophagus occasioned through a simple inflammatory condition, perhaps due to a localized inflammation of some kind, was not regarded seriously, and it has remained for comparatively recent investigations to demonstrate the fact that permanent strictures of the esophagus, at times endangering life, may so arise.

In the study of a condition of this kind we are handicapped by the lack of opportunity to conduct autopsies, for it is but rarely that cases of this character end in death. The cases that I have observed I have studied very carefully with the esophagoscope, and have made it routine practice whenever a patient comes to me complaining of the least difficulty in deglutition to subject him to careful endoscopic examination of the esophagus. These examinations are best made without the application of cocaine to the esophagus, for when this is done there is considerable blanching and retraction of the tissues, which sometimes causes the stricture to be overlooked.

The commonest symptom complained of by patients with this condition is that first present in all forms of stricture of the esophagus —regurgitation of food. Patients will complain that food lies in the upper end of the esophagus, and sometimes several hours after eating it will be regurgitated. There is no pain whatsoever, and

*Read before twenty-first annual meeting of the American Laryngological, Rhinological and Otological Society, June 15, 16, 1915, Chicago, Ill.

even though deglutition is difficult, the only sensation is that of inability to swallow food. Should the stricture continue long enough, naturally there will be some loss of weight, but usually this is a matter of a number of months before it is especially appreciable, for these patients seem to secure nearly enough food for adequate nourishment through gradual pasasge of the food past the the constricted area.

The treatment of this condition is not at all complicated. In the two cases that I have treated, neither failed to yield to gradual dilatation. This is applied through the esophagoscope, and in my work I have used Jackson's modification of Bunte's probe, and linen bougies of various sizes. No anesthesia is necessary. At first dilatation should be practiced daily, and then every other day, with increasing intervals, according to progress of the case.

Thus briefly I present a summary of the condition which I have been studying. The literature of esophagoscopy is exceedingly meager in its contributions to this subject, and I have been able to find only one article that is notably thorough in this respect. This is by Guisez[1] and in which he says that the esophagus is capable of becoming completely stenosed under the influence of irritation, and of simple chronic inflammation. In several cases where there might have been doubt, he has had microscopic examination of portions of tissue removed from the suspected locality. He finds that inflammatory stenoses localize at the contracted extremities of the esophagus—cervical and cardiac ends—and sometimes also at the site of the crossing of the arch of the aorta. Inflammatory stenosis is established by two different processes. One of these is simple thickening of the wall and circular cicatrical contraction consecutive to esophagitis. This esophagitis may be due to chronic irritation, indigestion, alcohol, incomplete compression, adenopathy, neighboring tumors, aortic ectasia. The other, and most frequent cause being spasms, terminating in permanent stenosis. In the beginning there is a simple spasm, which is repeated, and causes a subjacent stasis; then through inflammation spasmodic contracture and complete closure of the canal at this location result. The alimentary stasis following upon this then causes inflammation of the esophageal wall, which frequently results in cicatrical degeneration. The initial spasm is due to some local cause; it is never found in patients who do not eat rapidly and masticate poorly. Consecutive to these inflammatory stenoses, retro-dilatations aré produced. These are diverticula, situated in the upper portion of the esophagus, and the large idopathic dilatations of the lower portion.

Chevalier Jackson, the dean of American per oral endoscopists, in a personal communication says that he has had several cases bearing out the observations of both Guisez and myself, and in his address on "The Recent Progress of Endoscopic Methods as Applied to the Larynx, Trachea, Bronchi, Esophagus and Stomach," before the International Medical Congress, in London, he says: "In certain cases there are undoubtedly lesions of the mucosa in the esophagus and also in the stomach which could easily excite spasms, and it is equally certain that the stagnation due to the spasm, and consequent fermentation of food, detention of secretions and maceration could very easily excite or perpetuate the lesions. Thus we have a "vicious circle" in hiatal and abdominal esophagismus. Observations by Guisez, McKinney, and also some observations of my own, point clearly to the fact that these lesions can also pro duce organic stricture."

The extremities of the esophagus, particularly the upper third, present very favorable localities for the formation of stirctures due to localized inflammation. There is an anatomical contraction of the esophagus at the extremities, and the walls constantly lie in apposition. There is no reason why the peculiar suceptibility of the urethra to the formation of strictures should not obtain likewise in the esophagus, for here is a very similar structure, especially so far as its lining and its vascularity are concerned. It is readily conceivable how frequently repeated spasmodic contractions of the walls of this canal, due to localized irritation, may result in stasis and the formation of a well-organized stricture from the deposition of plasma cells in the surrounding connective tissue stroma. This condition is to be dicerentiated from cardiospasm largely in the character that the stricture assumes, for here we find an organic stricture, whereas, cardiospasm causes hypertrophy of the esophageal musculature, with atony and dilatation following, but does not cause a true organic and annular stricture of the esophagus. Furthermore, the anatomic location of the obstruction in the cardiac end of the esophagus is almost diagnostic in cardiospasm, although Guisez has found these strictures in the cardiac portion. Plummer,[2] in his most interesting study of forty cases of cardiospasm, says "Cardiospasm is not often present in inflammatory conditions of the esophagus which come under observation. Evidence of esophagitis previous to the onset of the cardiospasm could not be elicited from any of the cases." But in these cases of organic inflammatory strictures of the esophagus, I believe there always is a primary esophagitis, due to some form of localized irritation, and this irritation is the result of digestive disturbances. The opportunity to

see cases of this character necessarily is limited, although it may be that a great many of them are overlooked, and regarded lightly at the time. In several cases which I have seen, I have had only two cases which I could carefully study, and in which I could arrive at satisfactory conclusions as to the causative factors, and which I had under observation sufficiently long to note the results of treatment. Both of these cases occurred in elderly men, and quite naturally, where esophageal obstruction is found in men past middle-age, the possibility—or I might say probability—of malignancy immediately presents itself. This of course was excluded by esophagoscopic study, the symptoms, and subsequent course of the cases.

G. B., aged sixty-two, a warehouseman, was referred to me by a local colleague in December, 1912, for an increasing difficulty in swallowing, which had begun about eight months before. There was no pain at all on deglutition, but food seemed to be arrested in the upper portion of the esophagus, and frequently was regurgitated. He had not lost any weight, and, in fact, was gaining in flesh. His normal weight was about 165 pounds. Mr. B. could not recall having swallowed a bone or any other irritating substance, but had suffered a great deal with indigestion, being a rapid and hearty eater.

Esophagoscopy showed an annular constriction at the introitus, through which I was enabled to pass the end of an 8 mm. Brunings tracheal tube. This constriction showed no ulceration, and was yielding in character. The stricture was 24 cm. from the incisor teeth. A diverticulum was not revealed by this examination, nor was there any pouching of the upper portion of the esophagus.

Dilatation of the stricture was practiced, using flexible bougies, with the aid of the esophagoscope, at first daily, and then at intervals of from four to six days. In a short while the patient reported improvement in deglutition, and on January 5th, twelve days after the first dilatation, he showed an increase in weight to 168½ pounds. Dilatation was continued for several weeks, and when the man was discharged he was having no further difficulty in swallowing.

This case evidently was one of localized inflammation, and showed no evidence whatsoever of malignancy. That there probably will be a recurrence of the stricture in his case I do not doubt, and I expect at some time in the future to again be consulted by him, with a view to having the same treatment instituted.

J. W. L., aged sixty-five, a Mississippi planter, consulted me the latter part of May, 1914, with the statement that for more than a year he had been having difficulty in swallowing. There was no

pain to this, but food would remain in the throat, lodging and gradually going down. This seemed to be in the upper portion of the food passage. On one occasion the food remained twenty-four hours before going on down to the stomach. There had been no loss of weight, but as his consumption of food materially was being reduced, he anticipated a reduction in weight before long, and stated that his strength was markedly less than prior to development of this obstruction. He had been bothered a great deal by his digestion, and had very bad teeth.

With the esophagoscope a constriction was found at the introitus, this being annular in character, and yielding to gentle pressure with a linen bougie. Beginning with a size 15 F linen bougie, I practiced gradual dilatation daily, then every five to seven days, and at the end of about four weeks of this, a size 40F bougie was passed without difficulty, there being a corresponding improvement in deglutition. This treatment was continued for a month longer, the patient in the meantime, acting on my advice, having had his dental imperfections corrected. When discharged at the end of this period Mr. L. was swallowing normally, greatly improved in strength, and had increased in weight by several pounds. He was instructed to return again in six or eight months for further observation.

Here again was a case of simple inflammatory stricture of the esophagus, in which the role of digestive disorder in its causation could not be questioned. The improvement in the patient's condition after treatment was begun was pronounced, and the deleterious influence of an esophageal stricture of this kind upon the general physical condition was very noticeable.

While the irritation of unmasticated food may produce a spasmodic contraction in this condition, and thus bring about a hypermia and stasis, with resulting new tissue formation, which terminates in an annular stricture, these strictures are not purely nervous in origin. They have none of the transitory characteristics of spasmodic contraction of the esophagus, for when they once begin they continue gradually to grow worse. There is no element of hysteria in this condition. The cases that I have seen have all been in well-developed and apparently otherwise thoroughly sound men, and men past middle-age. It is almost axiomatic that non-tramatic strictures of the esophagus in people past the meridian are malignant in nature, and this is sufficient to demand unusual care in arriving at a diagnosis in these cases. Yet it is comparatively easy to exclude cancer, for these strictures are annular, attended by no pain, and where properly treated relief promptly is obtained, all of which is

the contrary in carcinoma. That there is a reflex contraction in the musculature of the espohagus, due to the irritation of its nerve supply, I think there can be no question, for these strictures are so thoroughly uniform in shape, involving the entire esophageal circumference, that there must be uniform pressure to result in a symmetrical contracture. Yet again is present the fact that this condition—so far as my experience goes—occurs only in people past middle-age, where the nervous and muscular tones of the walls of the esophagus would be expected to be lessened. Still, this may account for the fact that there seems to be a suscpetibility to irritation from unmasticated food products in such people. Primarily, at any rate, in my opinion, there is a local hyperemia, due to this irritation, with probable subsequent contractions of the esophagus, passive congestion, stasis and infiltration.

Guisez[5] says that his experience comprised twelve cases of inflammatory stenosis of the esophagus, six of these occurring at the cardiac end, and the remainder in the upper third of the esophagus. My experience numbers four cases, all of the cervical portion of the esophagus, and in but two of these, which I report above, was I given an opportunity to keep them under observation until I could see the results of treatment. These cases both were studied by me most carefully through the esophagoscope, especially with a view to determining whether they were purely spasmodic in nature. This was conclusively shown to me to be the contrary. There probably was a spasmodic element entering into their causation at first, due to reflex irritation from poorly masticated food, but when they came under my observation the strictures were well organized, and susceptible only of gradual dilatation. I was careful not to use cocaine in the esophagus when I was studying these cases, in order to avoid its blanching effect upon the mucosa, for I desired to observe the tissues in their normal colorings. The area of the constriction was always more deeply congested than that above, and I found that when I attempted to dilate too rapidly, there was not sufficient elasticity to admit of this, and it occasioned marked discomfort to the patient. The process of dilatation was very similar to that involved in the treatment of a urethral stricture, although not so painful. and in neither of the cases which I followed to complete relief, was it necessary to use other instrumentation than the introduction of bougies.

Guisez, as reported above, had microscopic examinations made of portions of tissue removed in several of his cases. In neither of the cases which I had under observation did I attempt removal of tissue for the purpose of histologic examination, for these were cases

in private practice, and I did not care to subject them to the danger of traumatism, with its attendant reaction.

The frequent examinations that I made in these cases were conducted by means of Bruning's electroscope, using the 8 and 12 mm. tracheal tube. The brilliant white light afforded by this electroscope was of great value in studying the anatomical characteristics of these strictures. Using first the 8 mm. tube, as the dilatation proceeded, the 12 mm. tube was resorted to. As already mentioned, no cocaine was used in the esophagus, but the superior gingival margins and hypopharynx were anesthetized with a ten per cent solution of cocaine, carefully applied, in order to prevent its being swallowed. The esophagus is so free of sensation that the patients complained of no discomfort, other than from pressure against the superior maxilla. The dilatation was practiced with extreme care, for it would be the height of unwisdom to attempt to rapidly dilate an organic stricture of the esophagus. Not only is there danger of inducing an esophagitis through traumatism, but there is actual danger of rupturing the esophageal wall, with the consequent fatality which is so sure to follow this misfortune. This occurred in a case in my service at the Memphis City Hospital last winter, where I was gradually dilating a traumatic stricture of the cardiac end of the esophagus, due to swallowing concentrated lye, in the case of a negro boy, nine years of age. This patient was taken from my service, without my knowledge, by one of the general surgeons on the staff, who attempted reverse dilatation, blindly, through a gastric fistula, which I had had made in order to nourish the child during the time that I was dilating the stricture. The esophagus was ruptured, and within twenty-four hours the unfortunate child was dead.

Finally, I desire to enter a plea for endoscopic routine examination of the esophagus in all cases of difficult deglutition which have continued for any length of time. It is becoming apparent that we may have simple inflammatory strictures of the esophagus, and it is evident that these successfully can be treated by comparatively simple measures. Apart from the fact that we may thus discover strictures of this character, the value of esophagoscopy in the treatment of all lesions of the esophagus is evident to everyone who has followed the work of such men as Jackson, Killian, Brunings, Guisez and numerous others who are being added to the field of votaries of precision in diagnosis and treatment which the new methods of endoscopic examination offer.

Bank of Commerce and Trust Building.

PARTIAL PARALYSIS OF THE SOFT PALATE FOLLOWING REMOVAL OF TONSIL AND ADENOIDS.*

DR. DUNBAR ROY, Atlanta, Ga.

Quite a little has been written within the last two years concerning some of the ill effects following the radical removal of the faucial tonsils. The following case came under my observation within the last year:

J. H. (male), age four and a half years, was operated upon in the hospital on May 20th, 1913, for removal of tonsils and adenoid tissue in the naso-pharynx. Complete removal was accomplished without trouble and with less traumatism than usual Two days later the patient was out playing, with no signs of bad after effects. The throat was not painful on deglutition and there was but a slight amount of exudate in the tonsillar cavities.

On June 1st, ten days after the operation, he was brought to my office with the following history: Two days previously the child showed a temperature of 101°, some malaise and some inability to articulate distinctly. In swallowing liquids, some of these came back through his nose. Two days before noticing these symptoms the patient had been allowed to eat excessively at a Sunday dinner.

Examination showed the pharynx and naso-pharynx in a good condition. There were only slight signs of inflammation. The tonsils had been thoroughly extirpated and both pillars appeared normal. No pain. The tongue was white and coated. When the patient talked there were all the signs of paresis of the soft palate just as is frequently seen after diphtheria.

The patient was ordered a grain and one-half of calomel, to be followed with an enema. He was placed on small doses of strychnia and light diet.

June 4th, temperature continues 100½° pretty constantly. The laxative was followed by considerable offensive excretion from the bowels. The uvula looks a little thickened. His physician saw the case with me and gave it as his opinion that the paresis was due to intestinal toxemia.

June 6th. This was the first day that the temperature has been normal. Strychnia continued internally. Patient seems well other than the difficulty in speech. The naso-pharnyx was irrigated with

*Read before the annual meeting of the American Laryngological, Rhinological and Otological Society, at Chicago, Ill., June 15-16, 1915.

an alkaline solution and then touched with a solution of argyrol. Spray through the nose was used at home.

June 13th. Patient has had no further temperature, and is apparently perfectly well except the voice. He is having massage in addition to the strychnia and can swallow without the liquid returning through the nose. The soft palate still has a leathery look. At this time the mother took the child on a visit to her old home, in Savannah, Ga. While there she consulted a pediatrist who concluded that the case was one of chorea such as has been described by Osler in his text-book. The same line of treatment was continued.

June 24th. Patient was seen on this date immediately after his return. He looks well but talks almost the same. The patient continued to improve but it was nearly three weeks later before the voice was practically normal. There has been no further trouble. The condition therefore lasted for nearly two months.

The ill effects upon the throat following the radical removal of tonsils and adenoids have been commented upon during the last two years by many observers.

Dr. Virginius Dabney read a paper before the American Laryngological Society in 1913, on the sequela of the radical removal of tonsils based on the observation of 200 cases. At the same meeting Dr. Payson Clark read a similar paper on the results seen in the Massachusetts General Hospital. The question of paralysis or paresis of the soft palate as one of the sequela of this operation was not mentioned by either of these writers which leads me to the conclusion that such was not observed. In addition to the report from these observers the literature for the last few years contains many others, in none of which has this sequela been mentioned.

Inexperienced operators and operators obsessed with the idea of radicalism have caused much damage to throats which would otherwise have been better had they never been touched. Operations for the removal of tonsils and adenoids should not be looked upon as a simple procedure but should have the same thought and care as any other major surgical operation. To operate hurriedly with the possibility of damaging the soft palate and the faucial pillars is inexcusable. To operate entirely by the sense of touch as advocated by some is certainly to be condemned. Every good operator has his own method which is perpectly proper and justifiable provided the technique accomplishes the results desired. Some tonsils can be removed in their capsule by almost any technique because they are large and pedunculated. In such cases there is no better instru-

ment than McKenzie's tonsillotome and it will always do the work thoroughly. In the submerged variety some dissection followed by the use of the snare will certainly give the best results although there will be more reaction.

Different operators accomplish the same results by different techniques. The operator should find the one technique which gives him the best results, which leaves the throat in as normal condition as possible, and he should adhere to this technique in all of his operations.

Because one man writes about a certain technique which appears different is no reason why the good operator should forsake his own and try another.

Like the observation of others, I have also seen within the last few years various mutilations of the pharynx caused by the so-called tonsillectomies. It is by no means uncommon in such cases to find the anterior and posterior pillars all united into one flat cicatrix and in many cases marked restricted movements of the palate.

The stripping of mucous membrane from the soft palate has also been seen sometimes in conjunction with the total ablation of the uvula. This is always due to the imperfect or faulty separation of the posterior pillar from the tonsils. The accidental removal of the uvula does not occur from the uvula being caught in the snare as a distinct organ but comes from the posterior pillar not being entirely freed from the tonsils and in this way the palatal mucous membrane and the uvula are drawn into the wire snare.

Makuen in a most excellent and timely article has called attention to the various defects in speech which may follow the faulty removal of faucial tonsils.

Injury to the muscles of the soft palate, the result of a radical removal of adenoids, has never been considered so far as one may gather from the various text-books and articles bearing upon this subject. The case here reported is the only one of its kind I have ever seen and the fact that a tonsillectomy was also performed keeps us from saying just which operation was the cause of the paresis. On the other hand there are arguments on the other side, namely, that the paresis was accidental and entirely independent of the operation. This is especially true since cases of paresis of the soft palate have been reported as being one type of chorea. The fact that the paresis occurred ten days after operation does not entirely exclude the condition as standing in the light of a *propter hoc*. In view of this experience, I am firmly convinced that operators too

frequently use an unnecessary amount of force and traumatism in the removal of adenoids. In the very young subject, say from three to six years of age, the naso-pharynx is very small and it is very easy to stretch the soft palate with any instrument used. The fact is we can unintentionally do the same thing by a digital examination in these cases for diagnosis. In the case reported I used a small-size Brandege's forceps for the removal of the adenoids. Since that time I have abandoned forceps in this operation because I am convinced that in opening forceps in the naso-pharynx of small children, there is every opportunity for a traumatism of the soft palate to occur. Such abrasions on the posterior surface can easily be the portals of entrance for various micro-organisms which can always be found in a naso-pharynx filled with adenoid tissue. I think also that operators are too prone to use large-size instruments for this operation which can be better accomplished by smaller ones. The LaForce adenotome is one of our best instruments, but this, too, is very apt to be used too large. The instrument without the large anterior bulbous portions is much the better one, since this latter frequently causes the stretching and traumatism of the soft palate such as we wish to avoid. Small Gottstein curettes following the use of this instrument is to me the ideal operation. The method which some have of using the finger to smooth and remove any particles which may be left, is a thoroughly proper procedure provided the finger is wrapped with sterile gauze. Even with this procedure great care must be exercised in not using too much force.

In the case here reported my own opinion is that the paresis followed the adenoid portion of the operation and that the infection was the result of a traumatism on the posterior service of the soft palate which to my mind was manifested by the thick, leathery condition found ten days after the operation. Every operator has seen how severe reactions following a tonsil operation will vary in different individuals. These reactions are sometimes very severe and for days the patient has an exceedingly uncomfortable throat. Under such circumstances we cannot be surprised that the normal function of the palatal muscles will be somewhat inhibited.

While this article is intended to report a rare sequela following adenoid and tonsil operation, it is also intended as a note of warning against the too frequent and especially the overzealous radical tonsillectomies which are daily being performed. So much has been written, especially in the secular periodicals, concerning the various ill effects produced upon the child's physical condition by the presence of adenoids in the naso-pharynx, that parents and neighbors

now make their own diagnosis without the assistance of the specialist. If one were to believe all that is heard and written about this subject, mothers would soon believe that their offsprings would become raving idiots if their children's adenoids were not removed. Do not understand that I am lessening the importance of this subject or the necessity of the removal of adenoids when their presence is a menace to the physical well-being of the individual. Experience only can determnie this point. The fact that every child five or six years old has a certain amount of adenoid tissue does not mean that every child should be operated upon. It has been my experience that every young child has adenoid tissue in the naso-pharynx but only when it is obstructive or the producer of a pathologic systematic or local condition should we consider the question of its removal. Because a child is a habitual mouth-breather by no means indicates that he or she has a large amount of adenoids. The parent or physician who thinks that the removal of adenoids will remove all symptoms of mouth-breathing in every case will be sadly disappointed, for in many of these cases the mouth-breathing is due to a short upper lip associated frequently with a high-arched palate and in such cases even if every vestige of adenoid were removed, the little patient would still continue to breathe through the mouth. What is needed in most of these cases is the work of the dentist in widening the palatal arch and thus lessen the distance between the nose and the border of the incisor teeth.

After writing this article, instead of completing a bibliography on the subject, which would be of very little value, I wrote to fifty members of this Society located in different parts of the country and submitted to them the following question: "Have you ever seen a total or partial paralysis of the soft palate following the removal of faucial tonsils, naso-pharyngeal adenoids or both?"

In this question the word *permanent* was not used because I had in mind only the temporary condition and because I do not believe that paralysis or paresis would ever be permanent unless there were a very radical surgical mutilation of the soft palate. Leathery infiltrations and restricted movements, sometimes seen two or three days after tonsil and adenoid operations, are not what I call paresis of the soft palate. In these cases should there be such oedematous infiltrations as to preclude the palate from closing off the naso-pharyngeal space in deglutition, we would have the same symptom as in paresis or paralysis, but in the former it would be rather a lack of approximation due to the inflammatory thickening of the mucous membrane and muscles. In some of my cases of tonsillectomy in the adult, there have been various degrees of reaction and oedematous

infiltration, but in none of these were symptoms of paresis present. Several replies mentioned the temporary restricted movements following these operations. They, however, disappeared in a few days, which would lead one to believe that they were unimportant and common sequelae. Personally, I think that such a sequelae is unfortunate and is rather indicative of too much traumatism at the time of operation. The soft palate is an organ of much importance in speech and deglutition and as such is delicate in its mechanism and should require the most gentle treatment in its manipulation.

I believe that all of us are too prone to manipulate roughly in the naso-pharynx at the time of doing an adenoid operation and too frequently do by touch what should be done more by the sense of sight. A swift operation in the naso-pharynx frequently with the palate obscured by blood is by no means an infrequent occurrence among the best of us. The large majority of tonsil and adenoid operations are performed at free clinics and hospitals so that it is natural to suppose many of these are never seen again and it is therefore impossible to know whether or not there was normal convalscence or even what was the final result. The after-care of these cases is certainly just as important as any other major surgical operation and they should be kept under observation until all inflammatory reaction has entirely subsided.

From the fifty-five letters sent out I received answers from thirty-nine men. Strange to say there was almost an equal division in the affirmative and negative answers. Sufficient data, however were obtained to warrant us in considering the question of this paper by no means unimportant in the end-results of our every-day tonsil and adenoid operation.

These were the replies:

H. Arrowsmith, Brooklyn. "Have never seen any such complication beyond the very temporary disability caused by the reaction following the operation."

W. L. Ballenger, Chicago. "Have seen a few cases of partial and total paralysis of soft palate muscles following tonsil and adenoid operations all recovering in a few days. Regurgitation through the nose was present in all cases."

J. E. Barnhill, Indianapolis. "Yes, I have had several. There was the peculiar voice and flow of fluid through the nose on attempt to swallow. This lasted a few days in most cases, several weeks in others."

J. C. Beck, Chicago. "I find that about 10 per cent of cases in private practice have a nasal twang after the operation which might

be called paresis. I look upon it more as an infiltration than a paresis."

R. C. Borden, Boston. "Personally I have never had a case of this kind in my private practice, but have known of a great many cases of partial paralysis following adenoid operations in the hospital with which I am connected."

J. Payson Clark, Boston. "Have never seen any such case."

Charles N. Cox, Brooklyn. "Have had one such case in private practice. A little girl, 8 years old, from whom I removed tonsils and adenoids January 28, 1907. Ten days later I noticed a paresis of the soft palate which disappeared in one month."

R. B. Canfield, Ann Arbor, Mich. "My hospital records show a case of almost complete bilateral paralysis of the soft palate following tonsillectomy in an adult. It persisted for two years gradually improving to complete recovery."

W. L. Culbert, New York. "Have had several cases of this condition but they were very temporary." He also speaks of a case of a vocalist now under treatment where some trouble of this kind was experienced after a tonsillectomy."

C. G. Coakley, New York. "No, only restriction of movements which I do not consider as paresis."

F. P. Emerson, Boston. "Have seen several cases of temporary paralysis of the palate in tonsil and adenoid operations but none were permanent."

T. J. Gallaher, Denver. "Have seen slight interference with the function of the soft palate in swallowing but this was due to swelling of the parts."

Charles P. Grayson, Philadelphia. "Have seen no such cases."

Thos. J. Harris, New York. "No."

Lee M. Hurd, New York. "Have seen a number of cases wherein under the present rage of operation the soft palate has been so much deformed that what remained was so ridged as to appear immobile."

O. Joachim, New Orleans. "No."

D. B. Kyle, Philadelphia. "No."

P. D. Kerrison, New York. "No."

M. D. Lederman, New York. "Can recall two cases in my own practice and have seen one other case operated upon by someone else."

Robert Levy, Denver. "Following adenoid operations where unusual traction was made upon the soft palate, have seen patients with faulty articulation and where liquids came through the nose

for a few days after the operation. This I presume might be termed traumatic paralysis."

H. W. Loeb, St. Louis. "No."

S. H. Lutz, Brooklyn. "Have seen a few cases wherein undue traumatism was unskillfully produced."

G. Hudson-Makuen, Philadelphia. Am unable to say just how many cases of insufficiency of the palate have followed the tonsil and adenoid operation, but I agree with you entirely that the condition is by no means an unusual one. I recall one case of almost complete paralysis of the soft palate following a mere digital examination of the vault of the pharynx and this continued for several years."

R. C. Myles, New York. "After the enucleation of imbedded faucial tonsils, a condition resembling partial paralysis, frequently occurs."

J. W. Murphy, Cincinnati. "In my experience where large tonsils have been removed and the tonsils extended well up into the soft palate, quite frequently a temporary paralysis has followed this operation. We have had several cases which lasted two or three weeks but eventually completely recovered."

James F. McKernon, New York. "No."

Seymour Oppenheimer, New York. "I have seen a number of cases of paralysis of the soft palate following some of our dissection methods of tonsillectomy. These have only been transient."

Wendall C. Phillips, New York. "No."

G. Sluder, St. Louis. "No."

Otto Stein, Chicago. "No."

W. E. Sauer, St. Louis. "No."

Harmon Smith, New York. "No."

B. R. Shurly, Detroit. "Have had one case of paralysis of soft palate which persisted for several days."

E. Terry Smith, Hartford, Conn. "No."

Geo. C. Stout, Philadelphia. "My records show three or four such cases."

J. A. Stucky, Lexington, Ky. "Have had one case of my own in which there was a very large, submerged tonsil which, after removal by dull dissection and the snare, neither anterior nor posterior pillar being injured and after the removal of an enormous adenoid in same case there was paralysis of the soft palate which continued for six weeks, interfering considerably with the patient phonation and especially that of deglutition. Have seen several other such cases in consultation."

C. A. Thigpen, Montgomery, Ala. "No."

A. P. Voislawsky, New York. "No."

Geo. B. Wood, Philadelphia. "Have had one case several years ago. The condition only lasted for a few days and was due I thought to the stretching of the soft palate by the finger in the vault."

S. Yankauer, New York. "No."

R. McKinney, Memphis, Tenn. "Have seen only two cases of this character. One occurring in a child six years of age and the other in young man age 22. The child had been operated upon several months previous for tonsils and adenoids. Four days before the writer saw him the child began talking through his nose. Examination showed the velum palati was paralyzed. The boy was kept under observation for some time but his speech did not return to normal. Have not seen him for two years so do not know the final result. The other case was a young man studying vocal and having a baritone voice. A tonsillectomy was done in another city. His voice has lost its resonance and is changed in quality immediately after operation. Examination, however, showed this condition to be due to a laceration of the parts at the time of the operation.

Grand Opera House Building.

Transplantation of Cartilage in a Case of Nasal Deformity.

J. VAILLANCOURT, *Bull. med. de Quebec,* January, 1914.

The patient referred to received an injury of the nose in playing lacrosse, and the nasal crest had become flattened in its entire length. The patient refused treatment by paraffin injection. A piece of the costal cartilage, two inches in length, was removed from the patient, and was suitably trimmed for the purpose. A cross incision was made at the root of the nose and the tissues lifted from their bony attachments until a sufficient space was secured for the insertion of the graft. The tissues were then replaced, and three fine sutures were used to close the incision. A **gutta-percha** splint was then applied, externally, and was kept in place by a bandage passed around the head and below the chin. The result, shown by the photo, is entirely satisfactory. WISHART.

GOLD-PLATINUM INSERTED IN MIDDLE-EAR FOR ADHESIVE PROCESSES IN THE MIDDLE-EAR.

Dr. Secord H. Large, Cleveland, O.

W. S., age 14, was referred to me January 11, 1915. He was from St. Vincent's Orphanage and very little could be learned of his family history. His parents have both been in the insane asylum. Mother has been discharged lately, but father still there. He has been in the orphanage for five years, and the Sisters state that he has always had some difficulty in hearing. This last year his hearing was so impaired that he was unable to hear the teacher unless he was in the front row.

On examination the following conditions were found: Large faucial tonsils with fair sized adenoid mass. Both drum membranes were retracted and had all the characteristics of a chronic catarrhal otitis media. The left membrane is adherent to inner wall of middle ear and is fixed in its anterior and posterior quadrants.

TESTS WITH LARM APPARAT.

Right ear, conversational voice, 12 feet; whisper voice, 1 foot; Acoumeter, 1 foot. Left ear, conversational voice, 1 foot; whisper voice, contact; Acoumeter, 6 inches. Weber?.

Schwabach was positive. Rinnie, negative either side. C. Heard in either ear, but shortened. C4 heard, but shortened. Politizeration did not improve hearing in either ear.

January 15, 1915, under ether anesthesia, two incisions were made, one in the anterior quadrant and the other in the posterior, and with angle knives the drum membrane was separated from the inner wall. After all hemorrhage had been arrested by adrenalin chloride, a piece of platinum and gold foil, one-five hundredths of an inch in thickness, was inserted, allowing the anterior end of the plate to protrude through anterior incision. The tonsils and adenoid mass were removed at the same sitting.

The patient had considerable pain, which lasted thirty-six hours. On the second day there was a very foul discharge which proved to be a mixed infection—micrococcus catarrhalis and staphylococcus staphylococcus albus. The dry treatment was carried out and politzeration commenced ten days after operation.

The house doctors and nurses commented on the improvement in hearing immediately following the operation. I decided not to test his hearing until all inflammatory conditions had subsided.

March 5, all discharge had ceased. An examination of the hearing was then made, with the folowing results:

Right ear, conversational voice, 12 feet; whisper voice, 1 foot; acoumeter, 1 foot. Left ear, conversational voice, 15 feet; whisper voice, 3 feet; acoumeter, 3 feet.

On May 15 I again tested his hearing, and it was practically the same as the above.

I expect to have a series of these cases to report in the near future, but I would be indebted to my colleagues if they would let me know if they have ever tried the above, and with what success. I have tried gold, platinum, gold and platinum, and Van Horn's membrane, and they have all set up a reaction with discharge. In the last case I used Van Horn's membrane, but had to remove it, as the discharge was so profuse, I felt it would never be tolerated.

The operation can be performed either under general or local anesthesia, and if we could find some foreign substance that would be tolerated in the middle ear, I feel certain that a great deal could be accomplished in these cases.

This one case alone certainly was well worth the trial. Patient was shown at the clinical pathology section of the Cleveland Academy of Medicine.

536 Rose Building.

A Case of Mucosus Mastoiditis. ISAAC ERWIN, M. D., New Orleans, *New Orleans Medical and Surgical Journal*, December, 1914.

This form of mastoiditis develops without perforating the drum membrane. It is not usually secondary to measles or scarlet fever, but may develop insidiously after an acute coryza. The author describes a case which presented the usual symptoms of streptococcal mastoiditis, but, in which, after operation, the culture showed *streptococcus mucosus*. SCHEPPEGRELL.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular meeting, April 22, 1915.

DR. HUBERT ARROWSMITH, CHAIRMAN.

A Case of Fibro-Myxoma of the Nose. DR. IMPERATORI, for DR. SMITH.

M. O. N.: Her family and past history are negative and are therefore omitted, excepting to say, that there has been no history of tuberculosis, cancer or tumor in the family. A little over a year ago, she noticed a slight obstruction to breathing on the right side, which has gradually become worse. About nine months ago she noticed a swelling externally about midway between the inner canthus and the tip of the nose on the right side.

This swelling has gradually grown larger. At present, the patient cannot breathe through the right side of the nose. There has never been any pain associated with the growth. In damp weather, there is a sense of soreness at the apex of the swelling, externally.

There has been no loss of weight and the patient does not feel ill; she eats and sleeps well, and the only disturbance is the difficulty in breathing.

This case is presented before the Section, because of the external deformity. The mass can be seen through the anterior nares and also post-nasally.

The case will be treated by the injection, into the mass, of monochloracetic acid.

Case of Epitheloma of the Tonsil. DR. IMPERATORI, for DR. SMITH.

J. J., aged 67 yrs., came to the Manhattan Eye, Ear and Throat Hospital, complaining of difficulty on swallowing for the past two weeks. His family history is negative as well as his past history and have nc bearing on his present condition. His habits have always been good He smokes about two papers of tobacco a week, takes very little alcohol and denies any venereal history. He states that his present condition began about three weeks ago, when he noticed, that it hurt him to swallow; since then the pain has not increased in severity, but has been more or less continuous.

Examinations show a cauliflower-like growth situated on the site of the tonsil on the left side. There is some glandular enlargement at the angle of the jaw and of the adjacent glands. The posterior pillar and the glosso-epiglottic fold show beginning invasion. The larynx is free.

Microscopical examination confirms the diagnosis.

Such cases are not common; the interesting points are the insidious onset of the growth, the fact that the patient does not complain at all, excepting, that he can not swallow comfortably and the complete absence of pain in the ear.

Case of Telangiectasis. DR. DUNCAN MACPHERSON.

The patient, Miss Lizzie U., was thirty-five years of age, born in this country. She first came to the Manhattan Eye, Ear, and Throat Hos-

pital three years ago, complaining of nose-bleed. The tongue condition was discovered at this time, and the patient stated that it also had been bleeding for some weeks, but only at the time of eating. The patient has always been well with the exception of scarlet fever when nine years of age. As a child, she had bled from the gums between the central incisors. Nose-bleeding commenced at fifteen to sixteen years of age. At the present time she is under treatment for epistaxis, which is responding to cautery treatment.

The interesting features of the case are the family tendency to bleeding, and the method of treating the lip and tongue. The patient says her father's face was similarly affected, and her mother states that he had frequent nose-bleeds. He also suffered from tuberculosis, but died from dysentery. Her only brother is troubled with bleeding from the nose. A sister is troubled with nose bleeding and has spots on the tongue similar to those shown by the patient. One sister died of scarlet fever when young.

This family history is rare. Osler's investigations up to 1901 showed but one case reported, that of Rendu. Osler added three cases at that time, and Dr. Van Wagenen of this Section added another two years ago. This case would have been reported earlier, but has been deferred on account of an ineffectual effort to present the brother and sister at the same time. This may be done at another time.

Dr. Law has been treating the case by the application of fulguration to the budding capillaries with very satisfactory results, reducing the size of some and causing the disappearance of others. He gave twelve or fifteen treatments, and then the patient stopped coming as she said the bleeding had stopped and the treatments were somewhat painful.

Cancer of Larynx; Hemi-Thyroidectomy, Total Laryngectomy. DR. MACKENTY.

The case was presented because of peculiar and interesting conditions.

The woman, referred to me by Dr. Howel, gave a history of hoarseness existing for many years. Last fall this grew worse, and her larynx rapidly closed up. In December, Dr. Dowd inserted a tracheotomy tube for the relief of dyspnoea, and she wore this for a month before she was admitted to the Manhattan Eye, Ear and Throat Hospital. She suffered much from attacks of spasmodic choking not due to lack of air, but to irritation in the larynx. On looking into the larynx the vocal cords were seen lying against each other, and the larynx was filled with thickened tissue, not typically malignant. Two examinations of the tissue at different laboratories were both positive. The patient also had a large thyroid gland.

Six weeks ago I operated. The right half of the thyroid gland, part of the isthmus and the entire larynx were removed. The end of the stump of the treachea was curved forward and sutured to the skin. The first ring was removed to get a flap of mucous membrane tension, stitches were taken in the second ring so as to hold the trachea forward. Then the mucous membrane and skin were carefully sutured, the object being to eventually secure a continuous epithelial lining into the trachea, so that the patient would not have to wear a tube and have subsequent contraction.

The patient was fed through a tube inserted through the nose into the esophagus at the time of operation and left in place during the period

of convalescence, (three weeks). This is a very important feature. It is not well to feed these patients by introducing a tube at every feeding for it increases the danger of false passage and infection. The tube should be left in place until the wound is fairly well healed. If removed too soon, it is sometimes difficult to replace it.

The patient developed a good deal of infection in the neck, as is usua. The fact that she had an infected sinus prior to operation, made it more difficult to secure asepsis. On one side was the cut wall of the thyroid, which was also a source of irritation. The infection was quite severe and the posterior wall of the trachea sloughed away for three-fourths of an inch, and a fistula opened into the hypopharynx. There was a gutter between the mouth and the trachea. This was another condition that showed the advantage of using a feeding tube in the esophagus and so avoiding the danger of the food falling into the trachea. To obviate the gravitation of saliva, the wound was kept packed with gauze, frequently changed.

After the infection was checked, the wound closed up and at the end of six weeks there was a good wound and an opening into the tracheal presenting a good muco-cutaneous junction. The tracheal tube will in all probability be unnecessary.

The feeding after the operation is most important. Dr. MacKenty said that he fed these cases on a mixture of milk, oatmeal, strained milk and sugar, butter and oil. This makes a thick mixture which is forced into the stomach, and gives a fairly well balanced food product. It is a mistake to try to feed such cases on milk alone, or even on milk and eggs. Sugar, butter and cereals should be added.

Dr. MacKenty said that this was the only case he had seen or heard of where the thyroid had to be removed in order to do a laryngectomy. The after treatment is as important as the operation. Each case presents new problems. Two things are strongly indicated: Sustaining diet and a trachea kept clear of secretion. The suction pump used frequently during the day and night has been of great help in carrying out the latter indication. If feeding by esophagus became impossible, I would not hesitate to do a gastrostomy at once under novocaine anesthesia.

Occlusion of Larynx Following a Cut Throat. DR. MACKENTY.

Seven months ago this patient was brought to Dr. Mial's service in the Morristown Hospital with a cut throat. The larynx was terribly hacked. With much difficulty a tube was inserted and his life was saved. This tube was inserted through the crico-thyroid membrane.

The patient has come now to see if something cannot be done to relieve the obstruction of the larynx, which is complete, resulting from the severe injury at the time of cutting.

The first step was a low tracheotomy, putting the tube over the sternal notch, and removing the tube above. That was done three or four weeks ago. The upper wound is slowly healing. It will be necessary to wait until it has entirely healed and the larynx is quiescent, and then see how much space, if any, there is in the larynx for breathing.

Dr. MacKenty said that the case was presented to get the opinions of the members of the best methods of procedure from then on. It was his intention to do a laryngo-fissure and make an attempt to remove the thickened tissue from beneath the mucus membrane, covering as much

of the raw surface with mucous membrane as possible. The larynx would be packed and left open for a time. When closed, a tube would be put in to maintain the calibre. The case appeared almost hopeless. He promised to report later on the outcome.

DISCUSSION.

DR. CARTER said that the case of cancer of the larynx presented by Dr. MacKenty was such a remarkable one that it should not be allowed to pass without comment. He had been fortunate in seeing Dr. MacKenty operate, and it was one of the finest pieces of surgery he had ever witnessed. The difficulties he had to overcome in the larynx at first seemed unsurmountable. Dr. MacKenty had to go through the isthmus of the thymus, and there was a very severe haemorrhage which had to be controlled before he could proceed. He was certainly to be congratulated on the result of the operation.

DR. ARROWSMITH emphasized the value of Dr. MacKenty's suggestion in regard to the feeding of the patient after such an operation. That was one of the most difficult features that must be contended with.

In the second case it would seem that a laryngo-fissure and the presence of a laryngostomy tube for a time might be beneficial,—and he recommended the use of Koschier's tube, modified according to a suggestion that he)Dr. Arrowsmith) had made at Atlantic City. He had himself used this tube once or twice with very satisfactory results.

Cases of Nasal Deformity Treated by Bone Transplantation. DR. W. W. CARTER.

Published in the present issue of The Laryngoscope.

DISCUSSION.

DR. ARROWSMITH said that every report from Dr. Carter regarding bone transplantation in the nose emphasized the value of the technique he had devised and the ingenuity and assiduity with which he had followed it up. Certainly the results in the patients shown tonight, and the plates taken so long after the original operation corroborated beyond argument the correctness of his original assertion concerning the persistence of the nourishment of the bone under the circumstances. He had certainly earned the appreciation and endorsement of the Section in the work he is doing.

DR. HAYS complimented Dr. Carter on his work and said that it should be remembered that it takes much experience to do such work as Dr. Carter has shown. He himself had done four of these operations, the first of which had turned out very nicely, the others not so well. He said that he was sure that these later cases would have done much better in Dr. Carter's hands. Like all plastic work of this character, a certain amount of ingenuity is necessary in order to get a good cosmetic result, and even if the result seems good to the physician the patient is not always satisfied. He was impressed with what Dr. Carter said about doing the work through the nostril. When making an incision in the forehead, one is liable to get an infection which might mean trouble. He said he would like to inquire from Dr. Carter how he was able to keep the wound in the nostril from becoming infected and also how it is possible for him to make a proper incision in the periostium of the frontal

bone. It is not an easy matter to slip a rib under the periostium even when an open incision is made betwen the eyebrows.

DR. HAYS said that in September he had performed this operation on a specific case,—in fact all of his cases had been specific,—which of course increases the danger of infection. Three days after the operation the frontal wound, because of infection, had to be opened. That condition subsided, and then an infection broke out on the left side of the nose. It was a question as to whether or not the bone should be removed, so it was not disturbed for three months when it was thought best to take it out, and much to his surprise enough connective tissue had formed to give a good cosmetic result.

DR. GUTTMAN expressed his appreciation of the skill and results shown, but wished to know why Dr. Carter preferred the rib to a part of the tibia. By using a piece of the tibia and trimming it with a chisel, he could get as large a piece as was required, and would so avoid the duplication of the rib as had been necessary in some of his cases. Dr. Guttman said that unless Dr. Carter shared the biblical conception of the greater productive ability of the rib, he did not see why bone from there should be preferred to that from any other part of the body. Again, he did not understand why Dr. Carter uses bone without periosteum. So far as known, periosteum has the tendency to cause bone growth, and it was not clear what advantage was gained by denuding the bone of its periosteum. Dr. Guttman said that in his opinion the later method of introducing the bone intra-nasally instead of from the outside, seemed the more reasonable, and had the added advantage of avoiding a scar.

DR. CARTER, replying to Dr. Hays' remarks about being able to do the operation through the nose without infection, said he felt there was less danger of infection through the nose than through the skin. It is well known to bacteriologists that the streptococcus pyogenes albus penetrates to the deepest layers of the skin, and it is more difficult to disinfect the skin than the mucus membrane of the nose. Furthermore, the secretions of the normal nose are to a certain extent bactericidal. Cultures from the nose are usually either sterile or the virulence of the bacteria is attenuated. If every precaution is used and the nose is thoroughly cleansed, and the back portion of the nose cut off from the operative area with cotton packing and the field then swabbed with iodine, there is less apt to be infection than from the skin. He had had no cases of infection when the operation was done intra-nasally. Dr. Hays was right in saying that there was more to be considered in the operation than merely placing the bone in position. After the bony foundation is secured, the appearance of the nose may be improved by subcutaneous methods if necessary. When infection of the wound takes place and the transplant dies and is absorbed, the fibrous tissue which replaces it will retain the nose in its proper position. The deformity does not recur even if the bone is absorbed. When it is absorbed either connective tissue, cartilage, or bone replaces it which retains the nose in its proper form.

Replying to Dr. Guttman, Dr. Carter said that the reason he preferred bone from the rib rather than from the tibia is that it has more nutrient foramina. It can be shelled out with ease, even more readily than it can be taken from the tibia. Furthermore, the rib is especially adapted

to this use on account of its size and shape, and the thickness of the compact tissue. The reason he employs two or three, or more, pieces of rib, is that small pieces of bone have a relatively greater osteogenetic power. All experience with bone transplantation has shown this. The reason he had shown to-night cases in which bone was used without periosteum was to demonstrate something that was *sub judice*, so to speak. He wanted to demonstrate that bone transplanted without periosteum will remain. He had showed a case of bone used with periosteum to illustrate how vigorously it had grown and how much better it was to employ bone with periosteum rather than without.

There is no question but that the transplantation of bone into the nose is the best method of correcting these deformities for which previously nothing has been done. The placing of foreign bodies into the nose has not proved satisfactory, for they always slough out. Such operations, even when done by the most skillful operators, have generally failed.

DR. HARRIS asked the privilege of the floor for Dr. Robert E. Buckley who had been doing some rather unique plastic work in closing septal perforations. Eight cases had been treated by this method, all excepting one showing very satisfactory results.

Plastic Operation for Closure of Septal Perforations. DR. ROBERT E. BUCKLEY.

With the aid of a diagram on the blackboard, Dr. Buckley explained his method of procedure.

DISCUSSION.

DR. HARRIS said that the work which Dr. Buckley was doing deserves the heartiest commendation. There has been much advance in this direction during the last few years, and when such results as Dr. Buckley had demonstrated could be done all should be ready to undertake it, although it was exceedingly delicate work. To use a needle inside of the nostril is not a simple thing, and Dr. Buckley was to be congratulated upon his excellent results. Since the one case where the results were not satisfactory on account of the specific condition, he had made it a rule not to undertake this work without first ascertaining positively that there was no specific taint in the patient.

DR. ABRAHAM asked if the operation was intended for primary perforations or only for secondary ones.

DR. BUCKLEY replied that the only cases he had operated upon were those where a previous submucous operation had been done and he had closed the perforation. It was merely incidental to the submucous. In order to perform it in a primary case, more cartilage would have to be removed.

Dr. Buckley had said that his patient had a dry scab formation, and Dr. Abraham offered a suggestion for the prevention of such a condition, which he himself had found very effective,—i. e., to have the patient wear cotton in the vestibule nose for two or three weeks following the operation. In the cases where he had had this procedure followed there had been little, if any, scab formation.

DR. MCCULLAGH told of a case of septal perforation due to removal of a spur, in which, after separating the flaps he had removed a piece of cartilage posterior to the perforation and slid it forward between the flaps so as to close the perforation. In this instance the action of the

cartilage was very interesting. It stayed in place perfectly for five or six days, and mucous membrane was growing out from the edge of the perforation apparently and promised to cover the cartilage. At the end of five days, however, it began to look brown and he was not sure whether a crust had formed or whether destruction of the cartilage was beginning. The condition was watched for eight days, and on the ninth day when the patient came in the cartilage had entirely disappeared and the perforation was as it had been before the attempt to close it. This was the first experience of the kind he had ever had, in trying to close a perforation with a piece of cartilage. The perforation was rather large, and the disappearance of the cartilage was most interesting. If it had been possible to preserve any perichondrium, that might not have happened.

Bilateral Radical Frontal Operation. DR. MULHOLLAND.

DR. MULHOLLAND said that the patient was not presented for the cosmetic effect but for some unusual features in the case. The patient was first seen three and a half weeks ago. He had then been suffering for some weeks with very ssvere pain,—the usual classical frontal sinus symptoms, starting at nine o'clock and clearing up at two or three in the afternoon. He had also had intense headaches at night and had had practically no sleep for five weeks. Examination showed a slight amount of pus in the middle fossa, and an egg-like protuberance in the centre of the forehead above. X-ray examination showed a perforation in the upper central part of the anterior wall of the frontal bone.

In operating, an incision was made through both eyebrows; it was not curved down at all. The bone on the right side was very soggy and was extremely thin, and when the sinus was opened it was found to be filled with thick creamy pus. On working up to the swelling, a piece of necrotic bone was found which had almost completely separated. The left side was also opened, and the condition there was not so extensive as on the other side. There was a connecting fistula between the right and left sides. A piece of iodoform gauze was inserted down through the fronto-nasal duct into the nose and removed in two days, and the patient was up and about. Before the operation a careful Wassermann test was made, and proved negative. Since then, the presence of the necrosis, the fact of its being localized, and the peculiar findings at the time of operation, have led to the belief that the condition was specific, and the patient was placed upon mixed treatment. He is now taking half an ounce of potassium iodid three times a day.

DR. LAW showed some pictures illustrating the extent of the perforation.

The culture taken by Dr. Jas. E. Duyer at the time of operation showed a streptococcus.

Multiple Papilloma of the Larynx in a Child. DR. T. J. HARRIS.

DR. HARRIS said that at a recent meeting of the Section the question of the best method of treatment of multiple papilloma had been considered at some length. The use of radium had been discussed, and Dr. Harmon Smith had advocated fulguration. Dr. Yankauer had been experimenting along the lines of overcoming the defects of fulguration in the larynx, and last fall had presented an instrument which he had devised to preventing overheating and short circuiting.

The child now presented had been shown before as a case of multiple papilloma. He was admitted to the Manhattan Eye, Ear and Throat Hospital last summer, and under suspension laryngoscopy as much of the papillomata were removed as possible. The boy was kept in the hospital under observation for a month, and was then sent home. Dr. Harris kept in touch with the case, and a month ago the mother reported that the child was having some difficulty in breathing at night. It was, therefore, thought best to have him brought back, and it was decided to try the fulguration treatment. This was done two weeks ago. The method was in some respects unusual. The child was anaesthetized with oil-ether, administered per rectum. Dr. Harris said that he was not very familiar with this method, but that Dr. Arrowsmith had used it a good deal and it had proved very satisfactory. Dr. Gwathmey gave the anaesthetic in this instance, and the anaesthesia was perfect. The child was put under suspension laryngoscopy and a complete exposure of the larynx was secured. Then, with the aid of Dr. Yankauer's apparatus, the fulguration treatment was given. The instrument worked very satisfactorily. By means of the compressed air outfit a clear field is maintained during the time of operation. The fulguration plant used at the Manhattan Hospital has a bipolar attachment. Some of the landmarks in the larynx are lost with this apparatus, such as the blanching effects of the monopolar method. According to Dr. Law, there is a much more powerful current—one which requires more careful application.

In this case, there was almost immediate swelling, and it was thought advisable to intubate the child, which was done in the suspension attitude. The intubation tube was kept in place until the next morning, when it was coughed up and not reintroduced. The child was kept in the hospital for three days and then discharged. There was no reaction whatever and his breathing is perfect. With the exception of a slight cold, he is all right. It was thought perfectly safe to send him home, but of course the case would be followed up.

One point which Dr. Yankauer made was that not too much should be done at one time.

Dr. Harris had been obliged to leave the meeting, but Dr. Forbes said that he had been present at the operation three weeks before, and did not think that Dr. Harris had examined the larynx since. The operation had been done under suspension laryngoscopy.

Case Simulating Sarcoma Caused by the Gram Negative Diplococcus.

DR. JAMES J. KING.

The patient, a boy fifteen and a half years of age, came into the clinic at Gouverneur hospital in December. His father and mother are both alive and well, also brothers and sisters. At that time he had a peritonsillar abscess. After this was relieved, he was not seen again until February 18, when he returned. His tonsil then was very large and reddish, and the glands were very much swollen and very suggestive of sarcoma. Dr. Carter also saw the case and thought it might be sarcoma, so it was decided to study it carefully. A section of the tonsil was made and examined, but there were no signs of malignancy. The Wassermann and tuberculin tests were also negative. A bacteriological examination from Dr. Higgins' laboratory showed that the Gram negative diplo-

coccus was present in large numbers; a few streptococci were also present.

Dr. King said that he presented the case tonight in order to call attention to the Gram negative diplococcus of the throat, as he did not know of any such cases having been presented. Since last November he had had sixteen of these cases, fifteen private patients and this boy, making a total of sixteen cases having this Gram negative diplococcus infection. The symptoms in these cases had been very varied. This boy was thought to have sarcoma; two of the cases had very severe nephritis, one case had a severe nephritis, and endocarditis, and arthritis involving the knee and ankle and the muscles of the neck; in another case the knee and ankles were involved and the patient (a woman) was laid up for a year.

Twelve of these cases had been treated with autogenous bacterins or vaccine, receiving injections of 250 million cc. every four days until there was no reaction—all giving very satisfactory results. The boy presented had not yet received the bacterins but would do so shortly, with the expectation that the toxaemia would be cleared up, as had been the case in all the instances where it had been given.

Dr. King said that he wished merely to present the matter in this informal preliminary report, but was continuing the study and hoped later to make a more definite report. Very little is known about the subject as yet. Dr. Higgins was working on the organism, and hopes to classify them. So far as known, this was the first case reported.

Two private patients, one of them a doctor, were present and would say a few words about their cases.

DISCUSSION.

Dr. Walt P. Conaway, Atlantic City, N. J.: It was my misfortune to be ill for four months during the past year and the correct diagnosis of my condition was made by Dr. King after he made cultures from the crypts of my right tonsil. I was given four injections of the Gram negative diplococcus vaccine and the improvement was very prompt and quite positive. My illness began with a slight tonsilitis and an arthritis in one ankle. Following this I suffered from acute endocarditis, acute nephritis with suppression of urine on two occasions, myocarditis and a dilated right heart. I lost forty-five pounds in weight and I have many reasons for thinking that my illness was of a serious nature.

Shortly after I received the four injections Dr. King removed my tonsils, my improvement has been remarkable and today, about seven weeks after the operation, I feel perfectly well. I notice, too, that an enlarged joint on one foot, which has caused considerable pain at fresuent intervals for several years, is much smaller, and correspondingly free from pain and discomfort.

Dr. Dwyer said that the case had been especially interesting to him, for in the work at the Manhattan Eye, Ear and Throat Hospital they were continually meeting with this diplococcus but had not considered it of especial pathogenic importance, but that it belonged to the group of Gram negative organisms which is found in the throat all the time. How much pathogenicity it has is not known, but if the streptococcus was found to be present and mixed in the culture it was possible that

it was that which was doing the work. This diplococcus has always been classified as of unknown value. In 1910 a number of cases were treated with this unknown diplococcus and cures resulted. A number of vaccines were made from the diplococcus, but the cases were not controlled to see definitely what was the result. Certainly in his own cases he got results. Dr. King was to be congratulated upon his results in the series of cases and the seeming relationship between the isolation of the organism in practically pure culture. The good results from the use of the vaccine were of distinct importance and indicated the necessity of correct bacteriological diagnosis in such cases.

DR. CARTER said that he had seen Dr. King's case, as Dr. King had sent it to him for examination without telling him anything about it. At that time it certainly had the appearance of sarcoma. The tonsil was swollen and ulcerated and red, and the glands of the neck enlarged and immobile. The case presented every appearance of sarcoma of the tonsil. He understood that Dr. King had associated the condition with the Gram negative diplococcus, and if he proves that the association is constant he would deserve a great deal of credit.

DR. CONAWAY (Atlantic City) said that he was one of the unfortunate subjects troubled with this organism.

DR. J. F. O'BRIEN said that he had been taken sick on the afternoon of Thanksgiving day with a sore throat, and had a very toxic condition, with a temperature of 102-105.6,° with delirium. These symptoms disappeared in a couple of days, but three days afterward he had an infection of the frontal sinus and both antri, all of which cleared up excepting the left antrum, which had to be irrigated and drained. He also had albumin and casts in the urine. Dr. King took a culture which was reported by Mr. Connellan to be the Gram negative diplococcus. There was some difficulty in getting a pure culture. Three different attempts were made, without success until about the first of January. In the meantime, he had been running a temperature of 99 to 100 degrees all the time, but after three injections of the vaccine all the symptoms had disappeared and the albumin and casts which had been presnt since the outset, also disappeared.

DR. MCCULLAGH asked if Koch's influenza bacillus had been associated in these cases. He understood it was rather difficult to grow.

DR. KING said that he did not feel prepared to discuss the subject fully from a bacteriological standpoint. Mr. Connellan had promised to be present and discuss it from that point, and to bring some plates showing colonies of the organism, but had been prevented from coming. He hoped later to be able to make a more detailed report of the subject and to show these colonies, and he thanked those who had taken part in the discussion.

Iritis Caused by Infection from Septic Foci in the Mouth. DR. HASKIN.

A patient, G. B., 25 years of age, suffering with an iritis which had been relieved immediately by the extraction of two crowned teeth with alveolar infection at their apices. He had been under treatment for four months without relief, and the pain was so severe that he had ben unable to sleep without sedatives. After extraction, all pain ceased, and the eye has been rapidly clearing during the past four days.

He reported a second case, A. H. B., 47 years of age, male, in which a most severe irido-cyclitis had been under treatment for seven months at the Manhattan Eye, Ear and Throat Hospital, under Dr. Wooten. A Wassermann was negative; the urine was normal; no foci could be found in the nose or throat, the X-ray plates being clear, and he had been sent to a dentist in the course of treatment and had had two fixed bridges placed in his mouth.

When first seen, the man was in a most pitiable condition and suffered with constant pain. The X-ray film showed all bridge anchor teeth in bad condition, and an old septic crowned canine. These five teeth were removed at one sitting, and the relief was instantaneous. He slept that night for the first time in months, and the pain never returned. After eighteen days, he returned to duty on the police force, after having been on sick leave for nearly seven months.

A third case was that of one of the attending assistant surgeons at the Manhattan Hospital, who had suffered with attacks of iritis at intervals for over two years. On examination, both jaws were found to be very extensively diseased, and most of his teeth will have to be removed. Six have been extracted and others have been treated, in the hope that they may be saved. His general improvement has been most marked, and he reports that his eyes have not felt so well for years.

In this connection it is interesting to note that in the official bulletin of the National Dental Association for 1914, the report of the Mouth-Infection Research Corps says: "In three cases of iritis with severe neuralgia, there is no question but that phenomenal recovery was entirely due to the removal of an infected area in the mouth. These cases were among a series of eighty-seven cases of various infections that were studied in the Elliott Hospital connected with the School of Medicine of the University of Minnesota.

DISCUSSION.

DR. GUTTMANN asked if the patient had had an iritis in the other eye also, and whether the teeth were extracted at that time. He had never before heard that alveolar suppuration should be an etiological factor in iritis. He did not doubt that there was some focus of infection or some septic material about the teeth in the case presented, but it was hard to say whether it was post hoc or propter hoc. He wished to know if he was correct in understanding Dr. Haskin to say that the Wassermann test was negative.

DR. HASKIN replied that so far as the teeth were concerned, these patients had all been examined by other men in order to find septic foci to account for the iritis, but that nothing had been found in the ethmoid sinuses, kidneys or elsewhere; so the patients were sent to him and the radiographs showed these distinct areas of absorption and pus. The patient shown tonight had the left eye first infected; that was cured, but the other eye became infected and remained so.

Dr. Haskin said that he had no idea of suggesting that all cases of iritis were due to these tooth conditions. Many cases come from the tonsils or other foci; but where there are infections that cannot be located in the tonsils or the sinuses the septic foci may be found in the teeth. He himself had had an experience with a crown tooth, and a pus cavity was found which had probably been there for many years, although there had never been any pain to indicate trouble.

BOOK REVIEWS.

Plastiche Operationen. (Plastic operations.) By Dr. Ph. Brockenheimer, Berlin. Volume 1, pp. 160, with 258 partly colored illustrations and three instrumentarium plates. Verlag Curt Kabitzsch Wuerzburg, 1912. Price, M. 9.

Volume 1 of this work on plastic surgery presents a richly illustrated detailed account of the plastic operations on the face.

This is one of the few volumes in which a working-description of the technic and steps of the various operations of auto-plastic, the several methods of transplantation, hetero-plastic and healing processes following such operations are very satisfactorily set forth, and with this working-guide the surgeon may equip himself for such modifications in plastic surgery as the individual case may demand.

The section of this monograph of especial interest to the oto-laryngologist includes fronto-plastic, various forms of rhino-plastic, auro-plastic, the different types of operation for hare-lip and cleft palate, and an excellent bibliography covering these fields.

The book is exceptionally well illustrated.

Anatomy of the Brain. By J. F. BURKHOLDER, M. D., Prof. of Ophthalmology in the School of Medicine of the Loyala University, with an introduction by Prof. Henry H. Donaldson. Illustrated. Cloth. G. P. Engelhard & Co., Chicago.

This little volume is essentially a guide in the study of the gross anatomy of the brain and as such it will supply a long-felt want to medical students and to practitioners of medicine who desire to refresh their knowledge of this important, interesting, but difficult, subject. It is really not so difficult if it be studied in the proper way and this manual by Dr. Burkholder points out the way. The use of the brain of the sheep for purposes of study is a capital idea and the availability of material will do much to stimulate a student's interest in the subject much more so than the common use of a human brain by half a dozen men.

The book is to the point and its arrangement and the illustrations (most of them made by the author himself) are all that can be desired. A close study of the drawings and very prominent explanatory notes will teach more than pages and pages of written description of the relations of the various structures of the brain and its internal ramifications.

A Manual of Diseases of the Nose and Throat. By CORNELIUS G. COAKLEY, A. M., M. D., Professor of Laryngology in the College of Physicians and Surgeons, Columbia University; consulting laryngologist to the Sea View Hospital, New York Infirmary for Women and Children, etc., etc. New York City. Fifth edition, revised and enlarged. Illustrated with 139 engravings and 7 colored plates. Published by Lea and Febiger, New York and Philadelphia, 1914.

This old friend hardly needs any introduction and the fact that the demand for this work necessitated a fifth edition, speaks for itself. It has been brought up to date, as for example, in the value of the Wassermann reaction and demonstration of spirochetes in lesions in the nose and throat where the diagnosis of syphilis is in doubt. Special mention may also be made on the chapter of deformities of the septum and that on chronic diseases of the accessory sinuses. In the former the operation of submucous resection is described in detail and in the latter the technique of the radical operation is very explicit. The book has additional value, also, because of the author's suggestions for the selection of such medicinal and operative measures of treatment as he has found most satisfactory in his wide personal experience. The work will continue to maintain its place in the front rank as an ideal text-book for the medical student and the practicing physician.